PLANS

FOR

PUBLIC SCHOOLHOUSES

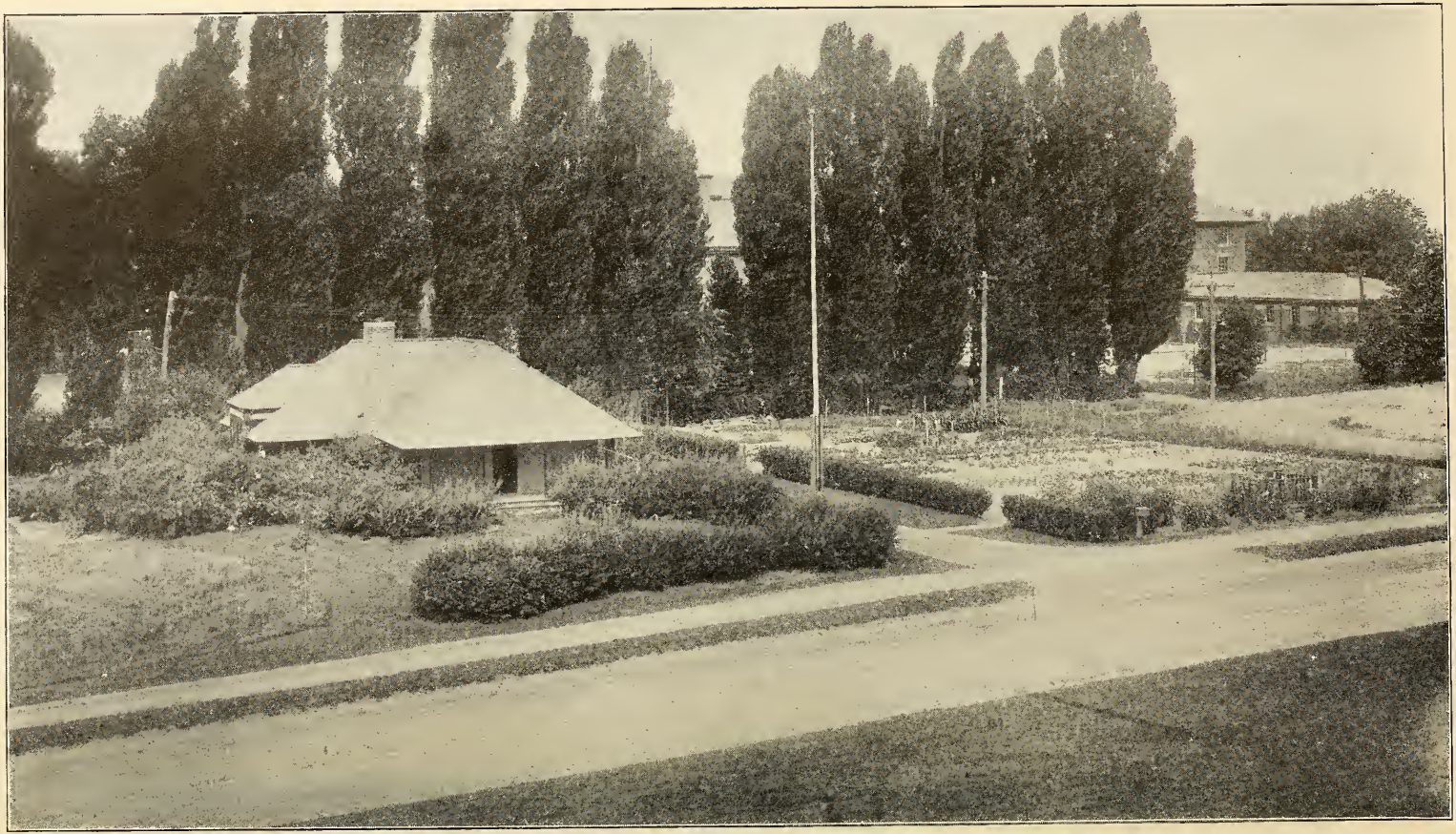
AND

SCHOOL GROUNDS

SUGGESTIONS FOR THE IMPROVEMENT OF
SCHOOL PROPERTY

1914

ISSUED FROM OFFICE OF
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, N. C.



By courtesy School Board Journal, New York.

MODEL RURAL SCHOOL, CORNELL UNIVERSITY, ITHACA, N. Y.

PLANS

FOR

PUBLIC SCHOOLHOUSES

APPROVED BY THE

STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

SCHOOL GROUNDS

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SUGGESTIONS FOR THE IMPROVEMENT OF SCHOOL PROPERTY

THIRD EDITION
REVISED AND ENLARGED

North Carolina

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STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, N. C.

RALEIGH
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CONTENTS.

PREFACE.

To suggest better plans for schoolhouses, to prevent waste of money on improperly constructed houses, when properly constructed houses can be erected in many cases at the same or slightly increased cost, to make it easy and inexpensive for school officers to secure these better plans, I have had prepared by Frank K. Thomson, architect, the subjoined revised and improved plans for schoolhouses. The first pamphlet of plans for schoolhouses was issued in 1903. This is the second revision. This pamphlet contains changes and improvements suggested by eleven years experience. Accompanying the plans will be found blank detachable contracts, full printed specifications, and carefully prepared bills of material for each house, together with cuts and floor plans of the same. If larger working plans for these buildings are desired, blueprints can be procured from Frank K. Thomson, architect, Raleigh, N. C., at $5 per room.

In this revised edition will be found also plans for dormitory buildings suitable for rural high schools and farm-life schools, for teacher's home and for sanitary toilets.

These plans have been prepared in accordance with modern principles of ventilation, light, and sanitation. Full explanations of each plan by the architect will be found in this pamphlet. It will be seen that some of the plans have been so arranged that larger houses can be evolved from the one-room house if the enlargement of the district or increased population and attendance should later require the enlargement of the schoolhouse.

To this revised pamphlet has been added also excellent suggestions and directions for planning and planting school grounds, for practical sanitation of schoolhouses and grounds, for schoolroom and schoolhouse decoration, for arrangement of playgrounds, etc. I beg to make grateful acknowledgment to the architect, Mr. Frank K. Thomson, and to Mr. A. S. Brower, Loan Fund Clerk of this Department, for their faithful and painstaking services in the careful revision of this pamphlet, in the collection and arrangement of material, and for valuable suggestions and contributions to the pamphlet. I desire also to acknowledge my indebtedness to Dr. L. A. Williams, of the School of Education of the University of North Carolina; Mr. J. P. Pillsbury, of the Department of Horticulture of the North Carolina Agricultural and Mechanical College, and to Mr. W. H. Booker, of the State Board of Health, for valuable contributions.

Any number of these pamphlets can be procured, free of cost, by application to State Superintendent.

Very truly yours,

J. Y. Joyner,

Superintendent Public Instruction.

Raleigh, N. C., June, 1914.

ALL HOUSES MUST BE BUILT IN ACCORDANCE WITH PLANS APPROVED BY STATE SUPERINTENDENT OF PUBLIC INSTRUCTION.

(School Law, Section 4124.)

Schoolhouses, building and approval of; contracts for.—The building of all new schoolhouses shall be made under the control and direction of and by contract with the County Board of Education. The board shall pay not exceeding one-half of the cost of the same out of the fund set aside for building under section four thousand one hundred and sixteen, and the school district in which any schoolhouse is erected shall pay the other part, and upon failure of such district to provide its part by private subscription or otherwise, the board is directed to take it out of the apportionment to that district. **But the board shall not be authorized to invest any money in any new house that is not built in accordance with plans approved by the State Superintendent of Public Instruction.** All contracts for buildings shall be in writing, and all buildings shall be inspected, received, and approved by the County Superintendent of Public Instruction before full payment is made therefor.

GENERAL SUGGESTIONS.

FOREWORD.

It is almost as cheap to build a good, attractive building as a poor, ugly one. It is not economy, but instead impracticable and unbusiness-like, to build cheap, unsanitary schoolhouses. Of all public buildings, the schoolhouse should be the one about which most care should be exercised in its construction and maintenance. Aside from being the place where the children of the community must spend a great part of some of the best years of their lives, and the most important as far as their health is concerned, the schoolhouse in our rural districts should be the social center of the community, the place where neighbor meets neighbor on common ground, and where all have a mutual and heartfelt interest. And, likewise, it should be the pride of the community—the one spot where the very best there is finds expression. For these reasons the school buildings, both inside and out, should be made as attractive and as wholesome and as sanitary as it is possible for the combined efforts of the whole community to make it.

THE SITE.

In selecting a site for a school one should, of course, be secured as near the geographical center, or the center of population of the district as possible, but neither the health of the pupils nor the natural beauty and fitness of the surroundings should be sacrificed to this purpose. The main points to be taken into consideration are that "it shall be central, yet retired, healthful and of ample size, at a point most accessible for all by the roads and paths leading to it."

The selection of a site for a schoolhouse has much to do with the hygienic condition of the school. If possible, it should be high and dry. An elevated piece of ground, a knoll, or a gentle slope are the most nearly ideal, because the drainage will be from and not toward the schoolhouse, the elevation will add much to the attractiveness of the view, and both the sunlight and breezes, which are so essential to health, will be allowed free play. Damp, springy or marshy land, or a site located near a sluggish stream, should never be chosen. Dampness is calculated to foster such diseases as diphtheria, typhoid and malarial fever, tuberculosis and rheumatism. Breathing a damp atmosphere will often cause languor and headache.

The school building should, if possible, be located on or near our public highways, where, with its busy throng, it can be seen by the passer-by, and even when the doors are closed and the voices of the children not heard, the building itself will stand as a silent sentinel for the cause of public education.

LOCATION OF BUILDING.

After the site is chosen, the question of the location of the building on the grounds and with reference to the direction of the compass should be carefully considered. Only in few instances should the building be placed immediately in the center of the grounds, but rather should be placed from 50 to

100 feet from the center of the grounds and about the center of the front line. This will allow the best view of the building from the road, and give ample grounds in front and on either side of the building for ornamental planting, and further allow sufficient room in the rear of the building for boys' and girls' playgrounds and the school garden.

Where the building is located in a grove, the trees directly in front of the class-room windows should be cleared away so that there should be no shadows cast in the room, and so that the light may enter through the windows unobstructed. With unilateral lighting—that is, where all the light comes from one side, this is most necessary. Trees, however, should be near, but not so near as to shade the house (especially those sides from which the light comes) completely, or to shut out the breezes in hot weather.

One of the most important points to consider in the location of the building and the selection of the site is the direction which the building should face. An easterly exposure for class-room windows is considered most desirable, with S. E., N. E., S. W., N. W., W., and North coming next in the order named. A directly southern exposure is least desirable, and one to be avoided.

Following will be found the directions which each building should face. The directions are given in the order of their desirability:

Plan No. 1. North, N. E., N. W., S. E., S. W., South, and West. This building should never face East.

Plan No. 1-A. North, N. E., N. W., S. E., S. W., South, and West. This building should never face East.

Plan No. 2. North or South, Northeast or Southwest, Northwest or Southeast. Never allow this building to face directly East or West.

Plan No. 2-A. West, N. W., S. W., N. E., S. E., East, and South. Never allow this building to front toward the North.

Plan No. 2-B. S. W., S. E., N. W., N. E., South, and East. This building should never be allowed to face directly North or West.

Plan No. 3. S. E., S. W., South, N. E., N. W. This building should never face directly North, East, or West.

Plan No. 3-A. Same as No. 3. See above.

Plan No. 4. Same as No. 3. See above.

Plan No. 4-A. Same as No. 2. See above.

THE SCHOOL BUILDING.

The building should be warmly and substantially built, with solid brick foundation, double walls and floors. Without warm floors, feet are sure to be cold, and this impairs the health of the children and keeps them from studying as they should.

For the smaller buildings, brick piers may be used, and the space between them tightly boarded up with tongued and grooved flooring or ceiling. The extra cost of the materials required for the solid brick walls, double walls and floors, above the cost of piers and single walls and floors, will be more than offset by the saving in fuel and the increased comfort to the pupils.

All schoolrooms should be well lighted, heated, and ventilated. When the room is bright and attractive and the air pure, the pupils are always bright and attentive, and the teacher can do better work. With a poorly lighted room and bad air, the pupils are dull, inattentive, and irritable.

Each building should be provided with an entrance vestibule or hall, as a protection against cold draughts in the schoolroom. The schoolrooms should each have an ample coat-room, with one or more doors opening from the schoolroom, so that the teacher can have perfect control over the room at all times. It would be hard to imagine a more unsanitary condition in a schoolroom than would be caused by the steam arising from a lot of damp and not always cleanly outer garments. This should be avoided by placing all coats and wraps in the separate coat-rooms.

The accompanying plans have been designed and prepared especially to meet the growing demand for better and more attractive school buildings for the country districts of the State of North Carolina. Special plans for larger buildings or buildings to meet certain requirements such as County High Schools and Farm-life Schools will be furnished upon request.

TWO-SIDE v. ONE-SIDE LIGHTING.

It will be noticed that the buildings, as planned in this pamphlet, call for the lighting of the class-rooms on one side only. At first thought, this will seem to be wrong and inefficient, but an instant's reflection will substantiate the wisdom of the architect.

In the first place, if a part of the light comes from the rear, the pupils will very evidently be sitting in a part of their own light and be working in the shadow of their own bodies. Unquestionably this is bad.

If the light comes from the right and the left, the light coming from the right will cast a shadow on any work done with the right hand; in addition, what is worse, there will inevitably be certain cross lights, which tire the eyes very quickly.

No one for an instant would think of having a part of the light come from the front and oblige the pupils to sit and look directly into the light when at their desks.

But if even this seems to be too theoretical, let us consider what the results of actual experiment have been. Time and again the test has been made of comparing the eyes of pupils in rooms lighted on two sides with pupils in rooms with one-side lighting. The result has invariably been that whereas the pupils working in the rooms lighted on two sides showed decided eye strain, the pupils working in the rooms lighted on one side showed little or no eye strain. In one case over 60 per cent of the pupils in the two-side lighted rooms showed the strain, and not one pupil in the one-side lighted rooms showed any trace of strain.

In the light of such evident results it seems unnecessary to more than state the desirability of one-side lighting to any sensible community. Theory, common sense, and experiment prove beyond any question that all class-rooms should be lighted from only the left side of the pupils.

CARE OF THE BUILDING.

By Dr. L. A. Williams, University of North Carolina.

SANITATION.

It goes without saying that a school building must be kept clean. The extent of its use makes it imperative that it be thoroughly swept every day the school is in session. After every sweeping the dust, which should be allowed time to settle, should be removed from desks, chairs, tables, window-sills, transoms, and all other places where dust collects, by the use of a cloth treated with oil or some antidust solution, or simply dampened with water. Much of this dusting can be avoided if the janitor uses some one of the numerous sweeping compounds or if the floor is sprinkled with damp, *not wet*, sawdust just before sweeping.

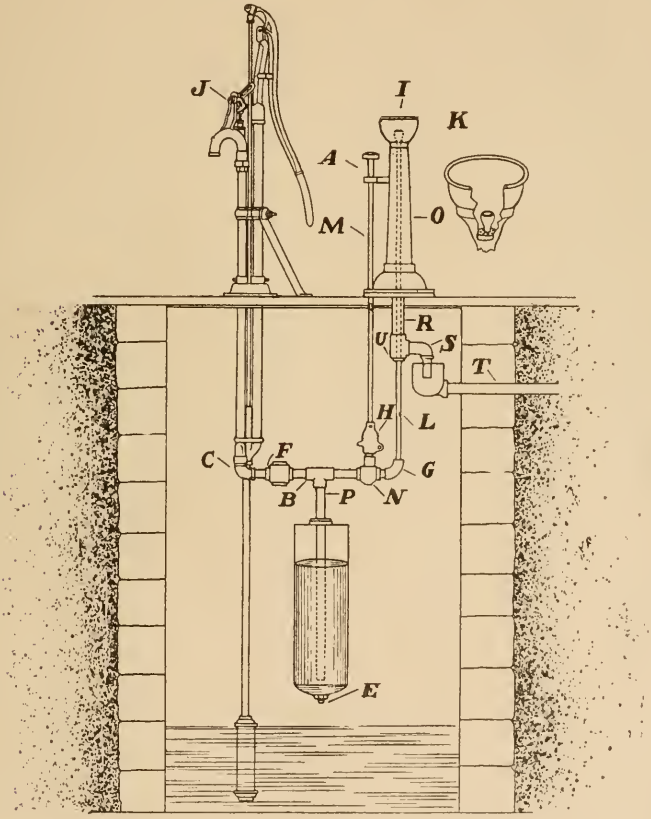
(Courtesy Linn-McCabe Co., Casey, Ill.)

Sanitary Drinking Fountain.

A very good home-made dust preventer may be made by taking a barrel of good clean sawdust and thoroughly mixing it with 5 quarts of common paraffine oil. Should this preparation be kept in an open barrel, a little oil may be added as needed. A few handsful sprinkled over the floor at each sweeping will not only aid in keeping down the dust, but will catch many a particle of dust that otherwise would have remained on the floor. This preparation is very inexpensive—the oil should not cost more than 25 or 30 cents and the sawdust can be obtained free in almost any community.

As a matter of district pride, the entire building (floors, woodwork, windows, etc.) should be carefully scrubbed with soap and water at least once every year. The best time is during the long summer vacation, and preferably not just before school opens. A dirty schoolhouse is entirely inexcusable; it is a sign of a dirty community. *Keep the schoolhouse clean.*

The same thing can be said of the sanitaries. The privies should be swept daily and the seats and walls kept neat and wholesome. The schools have here a great opportunity in setting a proper example for cleanliness in this respect. Do not allow the offal and refuse to accumulate; attend to it as a religious duty. Keep the outhouses scrupulously clean as a measure of self-respect, if not for sanitary reasons.



SHOWING CONSTRUCTION AND OPERATION OF MCCABE SANITARY DRINKING FOUNTAIN.

Keep the yard clean. Do not allow sticks, stones, and leaves to accumulate around the buildings. Be careful to keep the paper picked up, and do not allow the woodpile to clutter the ground with chips and scattered logs. If a school-yard cannot have decorative planting of shrubs and trees, the one thing it can have is neatness of appearance. The very large majority can have both.

In a word, neat, clean, sanitary surroundings help in the making of healthy, normal, clean boys and girls. That is one reason for schools.

REPAIRS.

It is a poor investment to build a good schoolhouse and fail to keep it in good repair. At the first, paint it with two good coats of an approved ready-mixed paint and be sure to keep it well painted thereafter. A good white paint is not expensive, and the resultant effect on the building is both pleasing to the eye and saving to the property. If other colors are desired, be sure to have them such that the effect will be a lesson to the pupils in sensible painting.

Do not neglect the little repairs. If a door begins to sag and the hinges to loosen, take immediate steps to remedy the defect. Replace all broken window glass *at once*. If there is a fence around the school lot, keep it straight and whole; don't let it get the "Peter Tumbledown" appearance. Go over the desks every fall before school opens and be sure they are all in good usable condition. Keep all valleys and gutters on the roof well painted. Do not neglect these places at any cost. Do not neglect reshingling until the roof leaks like a sieve, but repair every least damage. It is false economy to let little repairs go until large sums have to be spent in rebuilding.

Every committee should go over all the school property under its care twice or three times every year and make all needed repairs at once. Watch the heating apparatus, the chimney, the schoolroom furnishings, and fix or replace wherever necessary. Not only this, but require every teacher to report any needed repairs at once, and then attend to them immediately. Do not allow school property to get that "run-down" appearance which is so common in many sections of the country. Keep the schoolhouse and the grounds around it in such a condition that the whole community will be proud of this section of the township or district.

SCHOOLROOM DECORATION.

By Dr. L. A. Williams, University of North Carolina.

IN GENERAL.

If our education of children is to be complete we must develop their love of the beautiful as well as of the true and the good. There is no better way to do this than by placing them in beautiful surroundings. Appreciation of the beautiful develops in an atmosphere of beauty. It will atrophy and decay in an atmosphere of ugliness. Our schoolrooms must be beautiful and harmonious if we will develop the esthetic side of our pupils' lives.

In a discussion of decoration there are two ends, however, to be kept in mind: first, the effect on the sense of beauty, and, second, the effect on the nerves and temperament of the children. It is a fact, proven beyond a possibility of dispute, that colors have a very decided influence on the mental attitude of children. Certain colors will excite and antagonize pupils, while others will soothe and quiet. It is necessary, therefore, that we keep both these ends in view in our decision as to decorations for schoolrooms.

WALLS AND CEILING.

The walls and ceiling should be treated with some sort of coloring material. There is a wide choice here both of materials and of colors. In deciding on color to be used, there must be kept in mind at the same time the walls, ceiling, woodwork, and furniture, and an effort made to secure harmony in the coloring of them all. In deciding on material, the adaptability to the surface to be colored, the durability, the long-term cost, and the ease of securing the proper tint or shade must be considered.

Colors are often classed as warm and cold. Warm colors are those in which red and yellow predominate, cold colors are those in which blue and green predominate. The choice of color will depend largely upon the location of the building and the position of the windows. A room with windows on the north would need the warm light colors, while a room with windows facing the southeast would need the cooler colors.

It is always a good plan to select for a color scheme shades of the same color and arrange them so the lightest shade will appear on the ceiling and the walls down to the picture molding, the medium shade on the walls, and the darkest on the woodwork. NEVER have the ceilings a dead white. NEVER use bright colors on woodwork, walls, or ceiling. NEVER use an unbroken color of the spectrum, but dull them by mixing so as to soften the tones. NEVER have highly polished or varnished surfaces; a dull gloss is much easier on the eyes.

Experiments seem to show that the three middle colors of the spectrum (blue, green, yellow) serve as the best bases for schoolroom decoration. The best of these is a green so blended with blue in rooms having plenty of sunshine or with yellow in rooms having little sunshine, as to produce soft tones. The exact shade must be determined as previously stated. The unbroken blue, green, or yellow should never be used.

If these directions do not make the matter clear, send for some one who knows about the matter. Do not go ahead and put on any color that strikes the fancy of some one person. There is a right and a wrong to this thing. Be sure you get the right of it.

PICTURES.

The use of pictures for decorative purposes in a schoolroom could well fill an entire bulletin. Only the merest outline of such a discussion can be given here.

Every schoolroom should have at least one really good picture. Three or four on the walls at a time is better, but it is much better to have a small number well chosen than to have a large number of chromos. The purpose of pictures is to teach appreciation of the beautiful. To do this, quality is much more efficient than quantity.

Nor is it wise to hang a picture on a wall once for all. If possible, have a rotation of pictures for the different seasons, and do not always hang the same picture in exactly the same spot. So use a picture that it can be appreciated, enjoyed, and a source of inspiration, then put it to one side for a season to give place to another.

Do not select pictures at random nor from an adult point of view. Make the choice with the pupils in mind and consider their taste. Children in the primary grades enjoy pictures of other children, animals in action, madonnas. They do not enjoy still life, pictures of old folks, or landscapes. As the child grows older and reaches the fifth to seventh grades, there can be added pictures of still life, a few hero pictures, and an occasional landscape. With the coming of adolescence and the high-school period, there is intense interest in pictures of great heroes, older people, and pictures illustrative of life in other lands. The choice of pictures is a delicate matter, but well worth the energy exerted. Whatever is chosen, be sure it is a masterpiece. The reproductions are now so easy to obtain that there is no excuse for choosing other than the very best work of the great artists.

One of the very best suggestive lists from which to choose is found in a pamphlet, "The School Beautiful," published by the State Department of Education of Wisconsin. It does not pretend to be complete, but it is highly suggestive. For the convenience of schoolmen it is appended here:

PRIMARY.

Feeding her birds. Millet.
A distinguished member of the humane society. Landseer.
Little Rose. Whistler.
Shoeing the bay mare. Landseer.
The sheepfold. Jacques.
Escaped cow. Dupré.
Mother and daughter. Douglas.
Spring. Mauve.
Soft persuasion. Elsley.
Shepherdess knitting. Millet.
Primary school in Brittany. Geoffrey.
The first step. Millet.
The pet bird. v. Bremen.
Madonna of the Rosary. Murillo.

MIDDLE.

Horse Fair. Bonheur.
Children of Charles I. Van Dyke.
Spring. Corot.
At the watering trough. Dagan-Bouveret.
Sir Galahad. Watts.
Ploughing. Bonheur.
Haying time. Dupré.
Deer in forest. Bonheur.
Penelope Boothby. Reynolds.
Angels' heads. Reynolds.
Portrait of his sons. Rubens.
Equestrian portrait of Prince Don Balthasar. Velasquez.
The return to the farm. Troyon.

UPPER.

Washington's farewell to the army. Gow.
Washington. Stuart.
Martha Washington. Stuart.
Abraham Lincoln. St. Gaudens.
Vikings. Douglas.
Washington crossing the Delaware. Leutze.
The haymaker. Adan.
A reading from Homer. Alma-Tadema.
The shepherdess. Millet.
The fighting Téméraire. Turner.
Song of the lark. Breton.
The lake. Corot.
Water gate. Marcke.
Capitol at Washington.

HIGH SCHOOL.

Napoleon and the old guard. Crofts.
Arch of Constantine, Rome.
Arch of Titus.
Hunting with falcons. Fromentin.
The golden stairs. Burne-Jones.
Flight of night. Hunt.
Roman Forum. View from the Coliseum.
The sphinx, Egypt.
By the riverside. Lerolle.
Parthenon, Athens.
Aurora. Guido Reni.
Moses. Michael Angelo.
Cicero denouncing Catiline. Maccari.
Holy Grail series. Abbey. (Frieze.)
Advancement of literary knowledge. Oakley. (Frieze.)
Frieze of the prophets. Sargent.

Excellent companies with which to deal in securing these pictures and whose prices are reasonable are—

Berlin Photographic Company, 14 East 23d St., New York.
Braun, Clement & Co., 249 Fifth Ave., New York.
Curtis & Cameron, Pierce Building, Boston, Mass. (Copley prints.)
Horace K. Turner Company, 221 Columbus Ave., Boston, Mass.
Perry Picture Company, Malden, Mass.
George P. Brown & Co., Beverly, Mass.

The last two deal largely with reproductions of famous pictures in small sizes for individual class use.

A catalogue can be secured from any and all of the firms on application which will serve as an excellent guide in the selection of pictures for the schoolroom.

In mounting the picture, there is no rule about the use of mats. Much depends upon the picture. If a mat helps to bring out the beauty of the picture, it should be used; if it fails to do this, it is better not to use it.

In framing, select a plain molding of natural wood. Never use gilt frames in the schoolroom. It will be wise to have the natural wood stained to harmonize with the picture. The frame should serve to bring forth the beauty of the picture. Let it be as simple as possible.

In hanging, place pictures where pupils can see them easily and plainly. Do not have the bottom of pictures rest on the top of the blackboard molding; leave 6 to 8 inches between the board and the picture frame. Do not hang all pictures so the bottom lines will all be in a straight line. Do not try to form a geometric design in placing pictures. Remember that the children are to appreciate the pictures, not your skill as a designer of figures. Hang pictures from a molding extending entirely around the room, not from nails and tacks.

PLANNING AND PLANTING THE SCHOOL GROUNDS.

By J. P. Pillsbury, Department of Horticulture, A. and M. College.

CONTENTS.

THE SCHOOL GROUNDS.

Suggestions Concerning the Choice of a Location for the School Grounds.

The school grounds should not contain less than 3 acres of land. The average range will best be from 2 to 3, dependent upon the size of the district and the possible number of pupils.

The location should be as central regarding the district and means of access to it from all directions as possible.

The land should front on the southern or eastern side of the road, in order that the garden and playground portions may have proper exposure. (This, however, is dependent also upon the building to be built. See page 8.)

The land chosen should be somewhat higher than that immediately surrounding it; at least, a good elevation is highly desirable.

The land should be nearly level—the rear two-thirds of the grounds should slope slightly to the south or east, while the front third of the grounds should slope to the north or west, in order to provide good surface drainage and proper exposure for all plantings made.

Suggestions Concerning the Choice of Site for the School Building.

The shape of the grounds may be of three general types: (*a*) the square, (*b*) the rectangular, and (*c*) the irregular. The most commonly chosen forms are either the square or the rectangular, the latter with either the long or the short dimension fronting on the road. The rectangular with the long dimension fronting on the road is probably the best from the majority of viewpoints.

The building site should be on the highest part of the grounds, near or at the middle of their frontage, and at a distance back from the road line equal to about two or three times the height of the building to be erected. These points when observed will make the building equally distant from either front corner, and will permit the proper division of the grounds for playgrounds and garden purposes.

A combined tool and fuel shed or building may be conveniently located at the rear of the school building, and about 20 to 25 feet from it.

The two sanitaries or privies should be located one at the right and one at the left rear corner of the grounds. These should be surrounded with a lattice-work screen to be covered with vines.

Suggestions Concerning the Division of the Grounds.

Four general divisions should be considered: (*a*) the front or ornamental portion; (*b*) the boys' playground; (*c*) the girls' playground; and (*d*) the school garden.

The front or ornamental division should consist principally of a good grass lawn with shrubs massed in the corners and at points along the boundaries, and in the angles of the building; also, in a few scattered trees to provide shade and a few vines to soften the effect of the building.

The boys' playground may contain a baseball diamond and a basketball court, either or both, according to space available. The girls' playground

may contain one or two tennis courts, a basketball court, and a croquet ground, or these may be combined with one in case the space is limited.

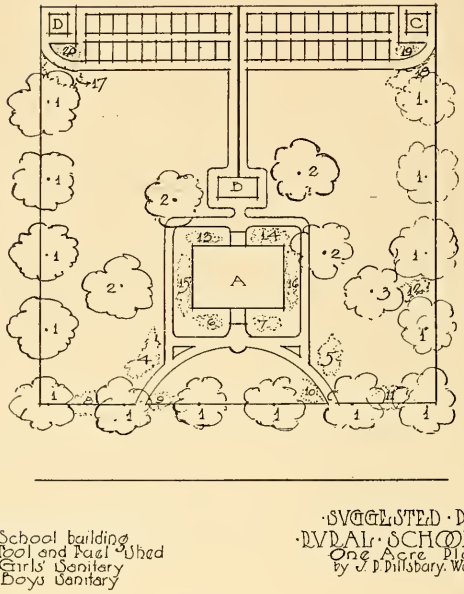
The school garden space can most advantageously be situated along the rear line of the grounds and may extend along its full length—that portion in the rear of the boys' playground being reserved for the boys' use, and that at the rear of the girls' playground being reserved for the girls' use.

SKETCHES SHOWING HOW TO PLAN THE SCHOOL GROUNDS.

Suggested Plans.

In the following suggestive schemes for the arrangement of buildings, division of grounds, and planting spaces, the general ideas already mentioned are illustrated.

In regard to the "Keys" which follow the plans, one or two points may be emphasized. First, do not plant all groups of shrubs indicated having the same number with the same variety of plant, but rather of plants with similar characteristics as to height, leaves, flowers, etc. Secondly, if each mass of shrubs be made up of one variety the effect will be much better in most cases than if more varieties are used together. However, such mixtures as white and pink flowered Tartarian Honeysuckle, each color grouped together in one part of the mass, make a beautiful combination, and where the space to be planted is large enough to accommodate, three or four of each kind will produce a good effect. Thirdly, no vines have been indicated to be grown on the walls or fences or screens about the sanitaries, but should be used as far as desired. One caution needs to be given in regard to planting bright colored flowering vines like the Crimson Rambler Rose against brick buildings, and that is that such colors never harmonize. Don't do it. There is nothing that will give better service on brick walls than Boston Ivy.



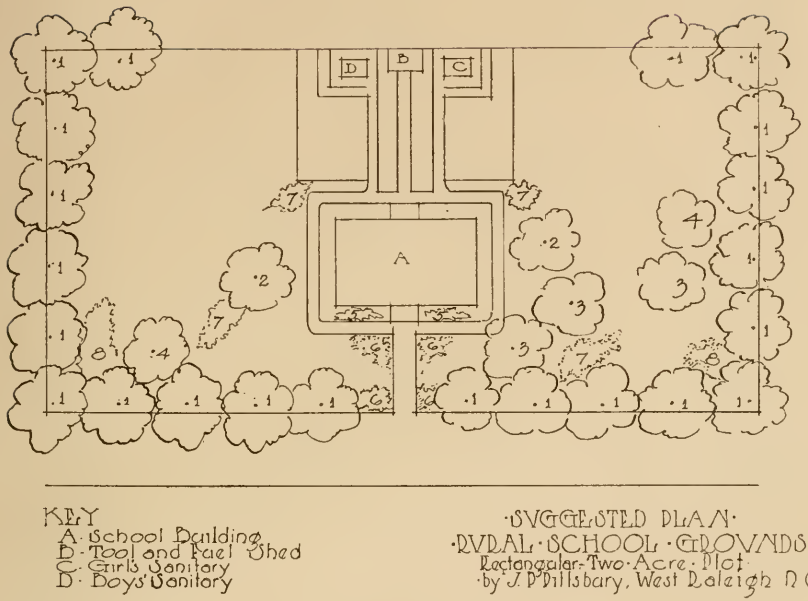
Explanation, Plate 1. Area, about 1 acre (208′x208′).

A. School Building.
B. Fuel and Tool Shed.
C. Boys' Sanitary or Privy.
D. Girls' Sanitary or Privy.

SUGGESTED PLANTING.

1. Oak.
2. Elms.
3. Maple (Sugar).
4, 5, 9, and 10. Medium-sized flowering shrubs.
6 and 7. Small evergreen shrubs.
8, 11, 12, 17, 18, 19, 20. Large shrubs.
13, 14, 15, and 16. Small shrubs or vines only.

NOTE.—No. 19 and No. 20 may be omitted, or vines to be trained over the lattice-work screens around the sanitaries may be substituted for the shrubs.

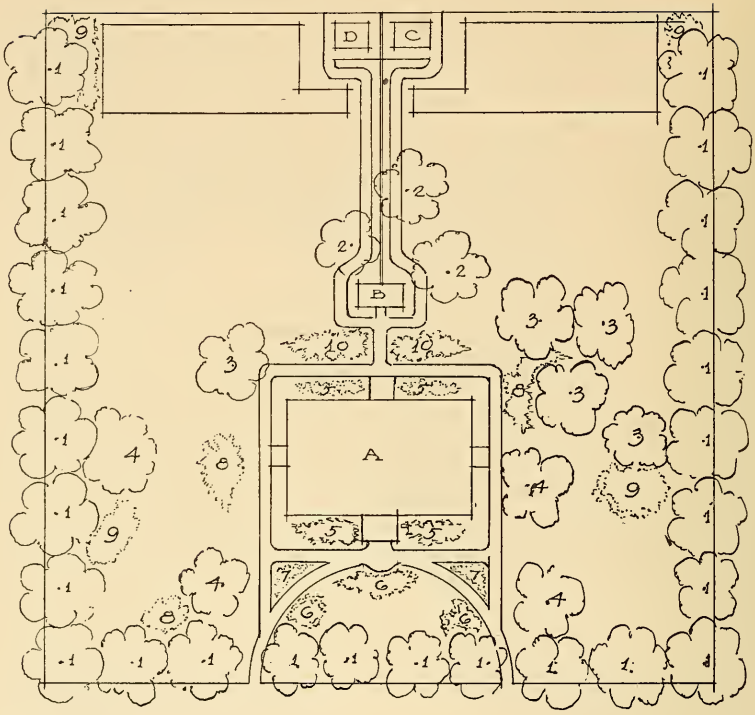


Explanation, Plate II. Area, about 2 acres (208'x416').

A. School Building.
B. Fuel and Tool Building.
C. Boys' Sanitary or Privy.
D. Girls' Sanitary or Privy.

SUGGESTED PLANTING.

1. Winged elm.
2. White oak.
3. Willow oak.
4. Sugar maple.
5. Low evergreen shrubs.
6. Flowering shrubs.
7. Large shrubs.
8. Medium-sized shrubs and evergreens.



Explanation, Plate III. Area, about 3 acres (360'x360').

A. School Building.
B. Fuel and Tool Building.
C. Boys' Sanitary or Privy.
D. Girls' Sanitary or Privy.

SUGGESTED PLANTING.

1. Willow oak, winged elm, or sugar maple.
2. Tulip tree.
3. Red oak.
4. American elm.
5. Evergreen shrubs—dwarf.
6. Roses.
7. Evergreen shrubs—tall.
8. Deciduous shrubs—medium size.
9. Large deciduous shrubs.
10. Repellant shrubs such as Crataegus, Barberry, or other plants of spiny character.

PLANTING DIRECTIONS.

General.

The best season of the year in which to plant perennials, such as trees, shrubs, vines, and herbaceous plants, is from November 1 to April 1. Within this extreme range, December, January, and February are the best months. January is probably the best of all, because even in the mildest years the plants are then most dormant, and there is ample time for them to develop their root-systems sufficiently to enable them to start into growth promptly when springtime comes.

The spot where each plant is to be set should be indicated by a stake with either the number or the name of the plant written upon it. Before anything else is done, these stakes should be driven in accordance with the plan of the grounds to be planted. The most satisfactory method of planting is one that will give immediate effect, and at the same time make it possible to secure good results later by thinning out. The usual method of doing this is to plant about twice as thickly as it is intended the plants shall stand when full grown. Specimen plants may be planted alone, but are much better if at first set in groups of three or more, and then all but the best one removed or cut out before they interfere with each other in growth. Masses are best set with each kind in a group by itself, the several groups making up the mass. Here a good general distance ranges from 3 to 8 or 10 feet, according to the height and spread of the plants to be planted. When trees are used in masses, the larger distance should be employed in planting, and a greater number taken out in thinning than in the case of smaller plants.

The first operation in actual planting is the preparation of the place. This should consist, first, in digging the hole wide enough to allow the roots of the plant to be spread out in a natural position without crowding or doubling them. Secondly, dig the hole deep enough so that it will be necessary in all cases to throw in a shovelful or two of earth on which to place the plant, and still allow it to be set an inch or two deeper than it was in the nursery or field. When the soil has settled thoroughly in addition to the tamping necessary in planting it, it will be found to be set at just about the same height that it was before planting—just exactly what it should be. Always dig the holes larger than will be necessary, and leave the bottom of the hole well broken up with the mattock or digging iron. This is more essential in heavy than in light and sandy soil. In digging the holes first throw the topsoil on one side then the subsoil on the other, and into the latter thrust the stake bearing the name of the plant to be set in the hole. As will be seen later, the pile of topsoil is to be used first, and this last precaution will prevent confusion and loss of time. The soil should be one easily worked and fairly rich in plant food. It is always foolish to use manure and commercial fertilizers in the planting of trees and shrubs, because they usually are applied in too great quantity or too improper a condition, and not only do not benefit the plants, but rather injure them by decay and what is spoken of as "burning" their roots. It is far better, in case the soil is poor, to take the excavated soil away and replace it with good surface soil from an adjoining field. After the plant is set, manure or fertilizer may be scattered over the surface of the ground and harrowed in with good results, but not before, unless at the time when the entire grounds are being prepared by plowing. Plowing the entire grounds is a good practice whenever it is possible.

The next step is the preparation of the plant, especially that part of it which goes in the ground. When plants are dug up for planting by far the larger portion of their root systems are left in the ground, unless they are quite small. One general fact is usually overlooked, namely, that nearly as much of every plant is below the surface of the ground as is seen above it. In digging up a plant, therefore, its root system is much reduced in extent, and, moreover, the most essential part of it—the little rootlets which take plant food from the soil—are practically all lost, and must be replaced before the plant can take food and grow. It is necessary, therefore, to cut off all broken or mutilated roots so that they can heal most quickly and send out new rootlets. It is necessary also to cut away enough of the top of the plant to make it about equal in size or extent to its root system when planted. This prevents excessive loss of water by evaporation, and causes the plant to start growth normally—there will be just about enough rootlets to supply food for the leaves which the tree will put out.

The third step in the operation of planting is the setting of the plant. Throw into the hole one or two shovelfuls of the topsoil previously thrown out first, so as to form a little mound in the center of the hole. On this place the plant and spread out its roots naturally. Then throw in more topsoil in amount sufficient to cover the roots. Then shake the plant up and down or work the soil among the roots by hand. After this is done, throw in another layer of topsoil and pack it tightly by tamping with the feet or by using a shovel handle, or tamper by rounding the end of a heavy stake, so that it will not injure the roots of the plant. Fill the hole up by throwing in the remainder of the topsoil, and then the subsoil in layers of 3 or 4 inches, tamping each layer as before until the hole is filled. A little surplus will usually be left over, and if instead of rounding this up around the base of the plant, it be left in the form of a ridge around the base of the plant and about a foot from it, it will form a basin which will catch water and insure still further the life of the plant. When the soil has finally settled, this ridge can be used to fill up the depression and bring it to the level of the surrounding surface.

If desired, a mulch of manure or composted material, or even commercial fertilizer, may be spread or scattered over the surface of the ground about the plant and gradually worked into the soil; but it will not be of any benefit until the plant has started to grow, and perhaps not even then. This resource is made use of in the case of older plantings which show signs of starvation. In these cases it is one of the best methods to use. Ordinarily, however, it is unnecessary.

Special Points.

In the matter of time of planting one or two exceptions are to be noted. First, in regard to evergreen plants. These are always "in leaf," and extra precautions must be taken. September, October, November, and December are much better months than late winter and spring where such plants need not be ordered from a distance. With this class of plants the one essential thing is to prevent their roots from drying. If they do become dry, they will not soften again, as their resinous sap hardens and becomes impervious to water. This is especially to be guarded against, because such trees are not pruned back at planting, and they have need of every rootlet which can be secured in digging. They also require more solid packing of the earth, and in dry seasons, especially, it is always best to use water in planting.

The usual method of doing this is to set the plant as already described, but, when the hole is half filled with soil, to pour in enough water to fill it, allowing it to soak into the ground before filling the hole with the loose soil. This method is the best insurance for evergreens. In case the plants are secured from nurserymen and at a distance, it will be better to plant them during the winter months.

Secondly, in the case of annuals, which must be grown from seed, springtime is the best for sowing; but if glass protection and heat are available, quite a large number of them can be started much earlier, and transplanted to the beds about the time the weather would otherwise be right for sowing the seed out of doors.

As to distance apart of plants in groups or masses, always avoid making groups alike as to arrangement and spacing. Strive for natural irregularity. Do not space all equally, but rather have some plants in the same group nearer together than others. All that is necessary is to get them together in a group. Further, it may be suggested that if you will notice it you will find that the chief charm of a view will now and then be due almost entirely to an occasional leaning tree.

In regard to their location, trees, shrubs, and vines should be used throughout the grounds where fitting, but herbaceous plants and annuals should be restricted to the school garden, where their proper cultivation can be most easily given, and so that there will be no bare places in the ornamental plantings when they die back to the ground in the fall or winter. They should have much the same kind of treatment as vegetable crops, and the garden is the best place for them. If there is a separate flower garden in which to grow them, so much the better. In setting plants several things may be noted. Plants with thick, fleshy roots usually require loose soil, and comparatively little tamping of it. On the other hand, plants having fine and fibrous roots require very firm planting. One can scarcely pack the soil too tightly about the roots of such plants, especially if it is not very moist. Again, some plants may be deeper than others. To this class belong such kinds as will readily produce roots along their stems when covered with soil. Privets, vines like the grape, honeysuckle, and English ivy, are examples.

Abbreviated List of Good Plants.

The following list contains the names of good dependable plants, but only of a few of those that are available. The effort has been to reduce the number suggested and include only those best suited to the purpose at hand.

Explanation of symbols: "C" following the name indicates that it is adapted to the Coastal Plain section; "P" the Piedmont section; "M" the Mountain section, and "A" all three sections.

EVERGREEN TREES.

1. Long-leaf Pine (Pinus australis). C.
2. Loblolly Pine (Pinus taeda). C., P.
3. Short-leaf Pine (Pinus echinata). P., M.
4. White Pine (Pinus strobus). P., M.
5. Black Spruce (Picea nigra). P., M.
6. Balsam Fir (Abies fraseri). M.
7. Hemlock (Tsuga caroliniana). P., M.
8. Red Cedar (Juniperus virginiana). P., M.

9. Live Oak (Quercus virginiana). C.
10. Magnolia (Magnolia grandiflora). A.
11. Red Bay (Persea caroliniana). C.
12. Palmetto (Sabal palmetto). C.

DECIDUOUS TREES.

1. White Oak (Quercus alba). A.
2. Willow Oak (Quercus phellos). C., P.
3. Red Oak (Quercus rubra). P., M.
4. Spanish Oak (Quercus falcata). C., P.
5. Scarlet Oak (Quercus cocinea). M.
6. Pignut Hickory (Hicoria glagra). A.
7. Pecan (Hicoria pecan). C.
8. Black Walnut (Juglans nigra). P., M.
9. Beech (Fagus ferruginea). A.
10. Iron Wood (Carpinus caroliniana). A.
11. Red Bud (Cercis canadensis). A.
12. Elm (Ulmus alata). C., P. (Ulmus americana.) P., M.
13. Sugar Maple (Acer saccharum). P., M.
14. Crab (Pyrus augustifolia). C., P. (Pyrus coronaria.) P., M.
15. Red Birch (Betula nigra). A.
16. Plane Tree (Platanus occidentalis). A.
17. Sweet Gum (Liquidambar styraciflua). C., P.
18. Tulip Tree (Liriodendron tulipifera). A.
19. Bald Cypress (Taxodium distichum). C., P.
20. Larch (Larix americana or europaea). M.

EVERGREEN SHRUBS OR SMALL TREES.

1. Arbor Vitae (Thuya occidentalis). A.
2. White Cedar (Chamaecyparis thuyoides). C., P.
3. Colorado Blue Spruce (Picea pungens glauca). M.
4. Devilwood (Osmanthus aquifolium). C., P.
5. Holly (Ilex opaca). A.
6. Yaupon (Ilex cassine). C.
7. Mahonia (Berberis aquifolium and japonica). P., M.
8. Laurel (Rhododendron maximum). P., M.
9. Boxwood (Buxus sempervirens). C., P.
10. Camellia (Camellia japonica). C.
11. Yew (Taxus baccata or canadensis). P., M.
12. Juniper (Juniperus nana). P., M.

DECIDUOUS SHRUBS.

1. Elder (Sambucus canadensis). A.
2. Roses (Rosa species and varieties). A.
3. Prickly Ash (Aralia spinosa). A.
4. Privet (Ligustrum amurense). A.
5. Sumach (Rhus glabra, copaslina, and cotinus). A.
6. Fringe Tree (Chionanthus virginica). A.
7. Spiræa (Spirea species and varieties). A.
8. Stagger Bush (Lyonia mariana). C., P.
9. Leucothoe (Lencothöe racemosa). M.

10. Weigelia (Diervilla species and varieties). A.
11. Burning Bush (Euonymus species). A.
12. Red Root (Ceanothus americanus). A.
13. Sweet Shrub (Calycanthus floridus). A.
14. Alder (Alnus rugosa and serrulata). A.
15. Japan Quince (Cydonia japonica). A.
16. Deutzia (Deutzia species and varieties). A.
17. Jasmine (Jasminum nudiflorum). A.
18. Crape Myrtle (Lagerstroemia indica). C., P.
19. Pearl Bush (Exochorda grandiflora). A.
20. Bush Honeysuckle (Lonicera tartarica). A.
21. Snow Ball (Viburnum tomentosum plicatum). P., M.
22. Mock Orange (Philadelphus grandiflorus and P. coronarius). P., M.
23. White Kerria (Rhodotypus gerriodes). M.
24. Mock Orange (Styrax americana). C.
25. Kerria (Kerria japonica). A.

VINES—CLINGING, CLIMBING, AND REQUIRING SUPPORT.

1. Boston Ivy (Ampelopsis veitchii). Clinging. A.
2. English Ivy (Hedera helix). Clinging. A.
3. Cirginia Creeper (Ampelopsis quinquefolia). Climbing. A.
4. Grape (Vitis species). Climbing. A.
5. Wistaria (Wisteria sinensis). Climbing. A.
6. Roses (Rosa species). Requiring support. A.
7. Honeysuckle (Lonicera species). Requiring support. A.
8. Trumpet Flower (Tecoma radicans). Requiring support. A.
9. Virgins' Bower (Clematis species and varieties). Requiring support. A.

HERBACEOUS PLANTS.

1. Columbine (Aquilegia sp.).
2. Chrysanthemum (Chrysanthemum sp.).
3. Tickseed (Coreopsis sp.).
4. Flag or Iris (Iris germanica and japonica varieties).
5. Chinese Peony (Paeonia chinensis varieties).
6. Phlox (Phlox decussata).
7. Periwinkle (Vinca species).
8. Hollyhock (Malva species).
9. Lilies (Lilium species).
10. Bear Grass (Yucca filamentosa).
11. Lychuis (Lychuis chalcedonica).
12. Ornamental Grasses.

ANNUAL PLANTS.

1. Sweet Peas.
2. Alyssum.
3. Snapdragon.
4. Cornflower.
5. Cosmos.
6. Poppies.
7. Marigolds.
8. Nasturtiums.
9. Petunias.
10. Verbenas.
11. Larkspur.
12. Pansies.
13. Sweet Williams.
14. Stocks.
15. Castor Bean.

PLAYGROUNDS.

Value and Necessity.

It is the inalienable right of every boy and girl to play. It is equally a right that they have a proper place to play. Time was when play had no place in the educational scheme, but that time is past and gone. Play has a very decided educational value, and a well-equipped playground is as much a necessity for a school as are books and maps and blackboards. The children need to play as they need to eat and sleep. Its physical effect is to make full lungs, strong muscles, straight backs, and ruddy cheeks. Its moral effect is to teach love for fair play, for honesty, and to give respect for "the other fellow" and for his rights. It trains in the coördination of muscles, the spirit of fair dealing, and in the true spirit of the sportsman in being able to take defeat with a smile. It has had a place in our best schools now for so long, and is such a proven success from a physical, educational, moral, and cultural viewpoint, that one can hardly imagine the necessity for urging on a sensible community the need for a large and well-equipped playground in connection with its school.

Location.

No school ground should have less than two (2) acres, and where there is a school garden twice that area is none too large. The playground should be at the back or at the sides of the building, the front being used for walks and ornamental portion. It is probably well to have one section reserved for the primary grades and another for the larger children. At any rate, do not have the children cramped for play room.

Equipment.

The equipment will, of course, depend very much on the community. There does seem to be a minimum, however, which every school can have at no very great expense. In fact, a fairly complete equipment can be built up in a few years by adding one or two new pieces every year and by proper care of the equipment from year to year. There seems to be no reason why every school cannot have in the course of five years the following set of apparatus:

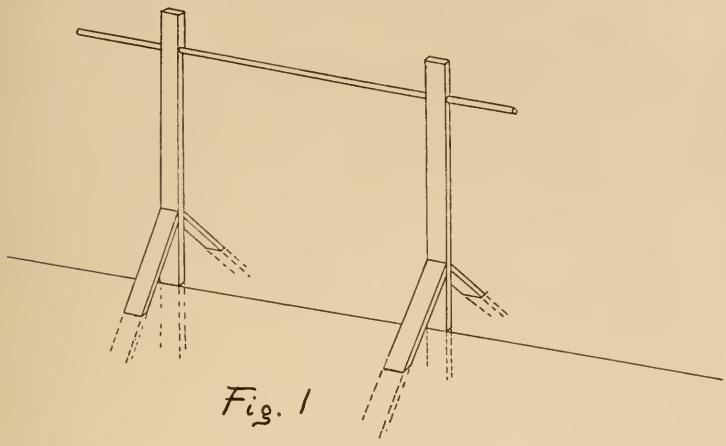
A sand pile of good clean sand, inclosed in a low box, with a wide plank across it for the children to build on. The sand should be frequently renewed. This is the natural playground for the very littlest children.

The necessary ground, courts, and paraphernalia for—

Baseball.
Basketball.
Tennis.
Croquet.
Volley Ball.

There is also a collection of apparatus described by the State Department of Education in Colorado in its pamphlet on School Buildings which can be built at small cost and furnishes endless opportunity for play. The following is a copy of the description of the apparatus and the cost of the same. The cost is based on the assumption that the teachers, pupils, and school authorities help in the construction:

A turning pole for boys may be made by setting two posts in the ground, 6 or 8 feet apart, and running an inch or inch and a quarter gas pipe through holes bored in the tops of the posts as shown in Fig. 1.

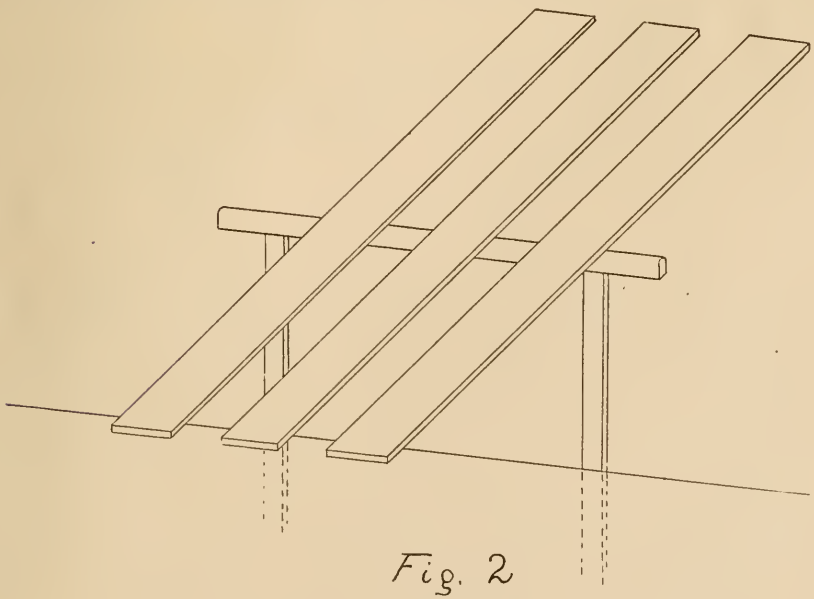


TURNING POLE FOR BOYS.

The cost will be about:

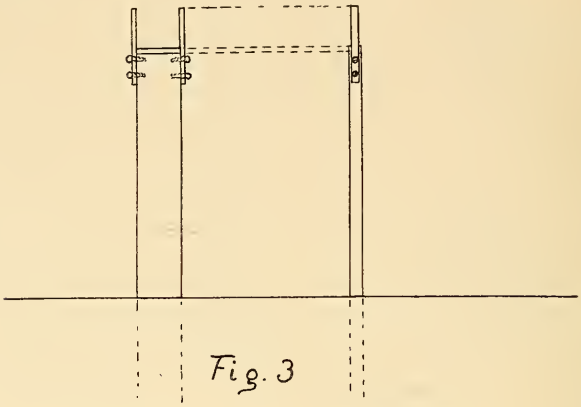
2 posts, 4″x4″, 8 feet long, 50 cents.
1 piece gas pipe, 8 feet long, 15 cents.

(Where a piece of gas pipe is not available, a smooth piece of round wood 2 to 3 inches in diameter will serve as a fair substitute.)



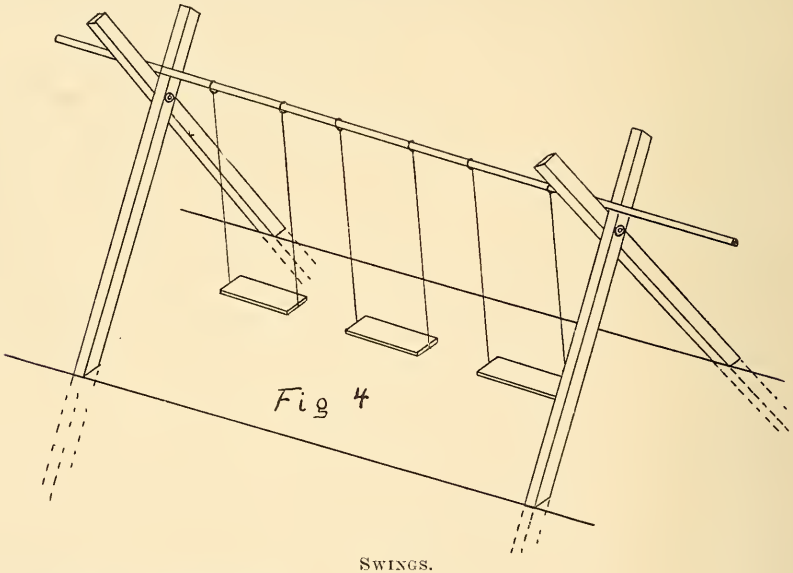
TEETER-BOARDS OR SEE-SAWS.

Teeter-boards may be made by planting posts 10 to 12 feet apart, and placing a pole or a round 6x6 on top of them, and then placing boards upon which the children may teeter, as shown in Fig. 2.



SUPPORT FOR INDIVIDUAL TEETER-BOARD.

Individual teeter-boards may be made by placing a 2x8 board in the ground, and fastening the teeter-board to it by means of iron braces placed on each side of the upright piece, as shown in Fig. 3.



SWINGS.

The cost—(several teeters):

2 upright posts, 6″x6″, 5′ long, 93 cents.
1 piece 6″x6″, 12′ long, $1.22.
4 teeter-boards, 2″x8″, 14′ long, $2.05.

(Individual teeters):

1 piece, 2″ by 8 feet, 16′ long, 50 cents—to make upright piece.
4′ long and teeter board 12′ long.
2 iron braces and 4 large screws, 25 cents.

An inexpensive swing may be constructed by placing four 4x4's in the ground in a slanting position, two being opposite each other and meeting at the top in such a way as to form a fork. The pairs may be 10 or 12 feet apart, and a pole or heavy galvanized pipe, to which swings may be attached, wired, nailed, or bolted to the crotches formed by the pieces placed in the ground.

The cost:

4 pieces, 4″x4″, 14′ long, $1.25.
1 piece galvanized pipe, 3″, 12′ long, $2.50.

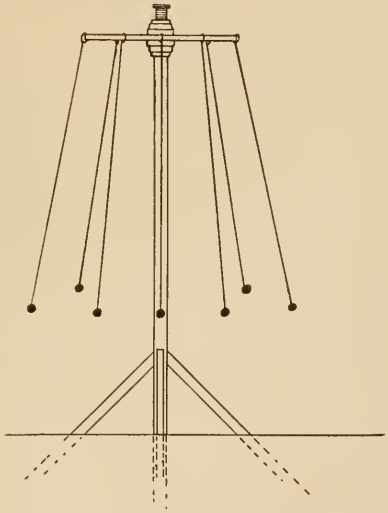


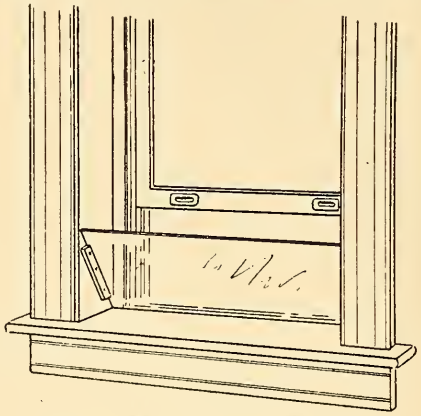
Fig 5

A very attractive and desirable piece of apparatus may be made as follows: Secure a pole about 14 or 15 feet long. To the small end attach by the use of bolts one end of a wagon axle, spindle up. Upon the spindle place a wagon wheel, and to the wheel attach ropes, about as long as the pole. Place the big end of the pole in the ground, 3 or 4 feet, and brace it from the four points of the compass. The ropes will then hang down from the wheel in such a way that the children may take hold of them, swing, jump, and run around the pole. The one described was rather inexpensive. A telephone company donated a discarded pole, a farmer a discarded wagon wheel and axle. The only expense was that of paying a blacksmith for attaching the wheel to the pole and the cost of the ropes. As I remember, the cost was about $2.

VENTILATION.

By Warren H. Booker, State Board of Health.

Open windows in schools are by all odds the cheapest and most general means of ventilation. The greatest difficulty is to have them kept open at all times during school hours. The objection raised by some is that open windows cause "cold drafts." Where these "drafts" are objectionable, deflectors should be placed in the lower part of the sash and the windows raised from the bottom as shown in the accompanying cut. These deflectors are best made of a piece of glass about a foot wide and as long as the window frame is wide. Where there is danger of children cutting themselves on the glass or breaking it, a frame can be placed around the glass for protection. Cleats can be tacked to the sides of the window frame to hold the glass or frame in place, so that for a glass or deflector a foot wide, the top will be tilted 6 inches inward. By this means, when the window is raised a foot



A Cheap and Efficient Ventilator.

or 15 inches, the incoming fresh air will be deflected upward above the heads of the pupils and quickly mixed with the warm air without causing drafts even immediately in front of the window. Such deflectors should be placed at all windows, and if there are windows on only one side of the room, the top sash should be lowered and the lower sash raised. When there are windows on more than one side of the room, the top sash should be kept closed and the bottom sash raised for ventilation at all windows. In no event should the lower sash be entirely closed during school hours except during heavy storms.

Every schoolroom should be provided with a thermometer, and it should be the duty of one pupil to record the temperature on the blackboard underneath the statement that the proper temperature should be from 65 to 68 degrees. The best place for the thermometer is on the teacher's desk, never on a wall or exposed to radiation from a stove.

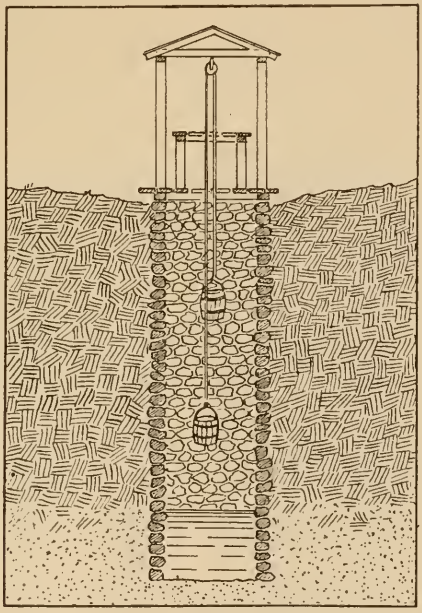
At recess the doors and lower sash should be opened wide for a few minutes to thoroughly flush out the room and flood it with fresh air. Pupils do much better work if the temperature is thus allowed to vary suddenly and the room filled with fresh air than they do under constant temperature.

DRINKING-WATER.

By Warren H. Booker, State Board of Health.

With the proper location of such a privy as described on p. 69, the protection of the drinking-water at schools becomes a simple matter. About all that is necessary is to protect the top of the well or spring.

Wells should never be so located that the surface drainage from higher ground may bring pollution from privies, barns, roadways, or other undesirable places near the well. Wells should be located on high ground, if the ground is uneven, so that surface drainage is away from the top of the well.



A Bad Type of Well.

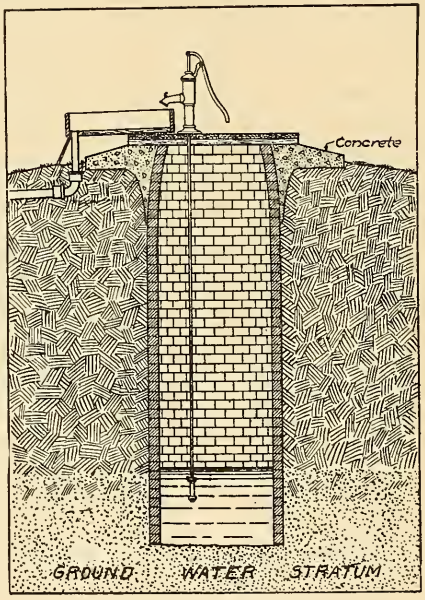
Open-topped wells are always dangerous and should never be used. During the course of a single year a tremendous amount of dirt, leaves, bugs, and other insanitary material get in open-topped wells. Sometimes toads, lizards, snakes, and small domestic animals find their way into such wells. If a dug well is used, it is best to have the wall laid up tight from within a few feet of the bottom. Special care should be taken to have the last few feet of the wall at the top of the well water-tight or set in cement mortar.

A good iron pump is infinitely safer than chains or ropes and buckets. In the case of an iron pump practically no iron is dissolved by the water, and if it were, no harm is caused. A little iron is essential to good blood and good health. In the case of open-topped wells, the buckets, chains, and water in the well are very frequently polluted by dirty hands. Such pollution should be carefully guarded against in schools.

A cement top or cover should be provided for the well, and provision made to carry off the waste water so that it cannot be spilled on or around the top and wash or soak back into the well, carrying with it all manner of filth and possibly disease germs from dirty shoes. The accompanying cuts illustrate good and bad types of wells.

The same general precaution should be taken as regard springs. Where practicable, the bowl should be lined with cement, covered tight, and the water carried off in an iron pipe. The water can then be caught from this pipe in cups or buckets without dipping them down into the spring.

When there is questionable surface drainage toward the spring, it is wise to cut a shallow trench, not over a foot deep, around the upper side of the spring at a distance of 25 or 30 feet from the spring. Where stock or frequent trespassers abound, it is usually advisable to fence off a small area just above the spring.



A GOOD TYPE OF WELL.

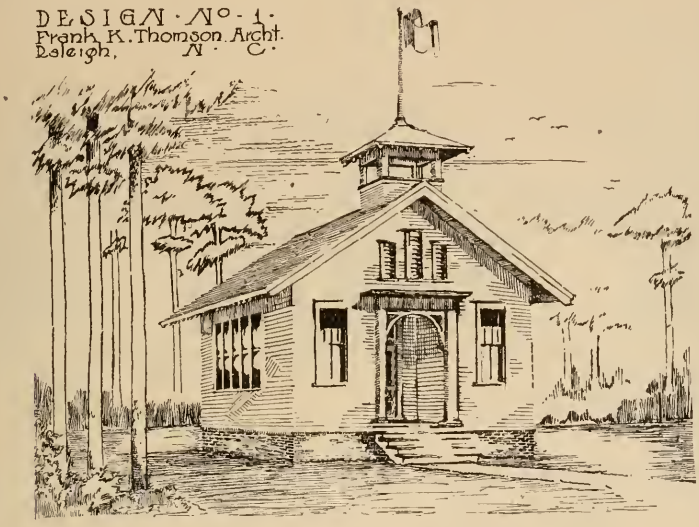
Some form of drinking fountain supplied from a tank, jar, or reservoir of some kind is highly desirable for schools. Where this cannot be had, each child should be required to use an individual cup kept in his desk or on a hook or pin properly labeled.

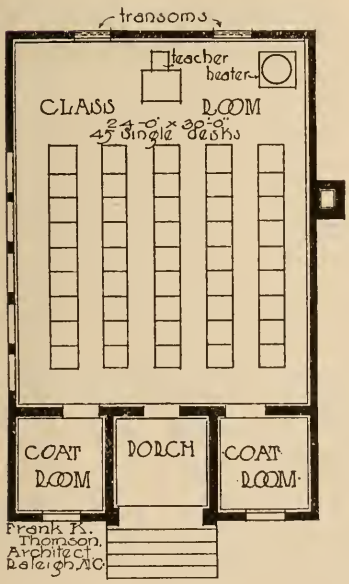
The common drinking cup should no longer be tolerated. A dipper may be used to fill cups from a pail, but no one should be permitted to drink from such a dipper. In instances where it is imperative that one use a common drinking cup, the edges should be carefully rinsed off and then placed against the outside of the lower lip or chin so that both lips protrude over into the cup, and no part of the edges or inside of the lip should be allowed to touch the edge of the cup.

PLANS FOR PUBLIC SCHOOLHOUSES.

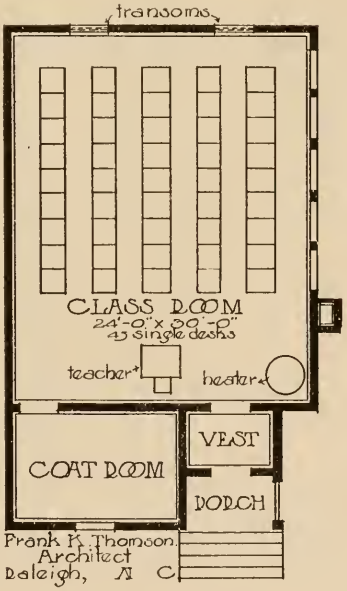
Designed by F. K. Thomson, Architect.

Where a building with one class-room will answer for present needs, build the one-room schoolhouse, plan No. 1, or plan No. 1-A, of accompanying drawings. When more room is required, a second room can be added to





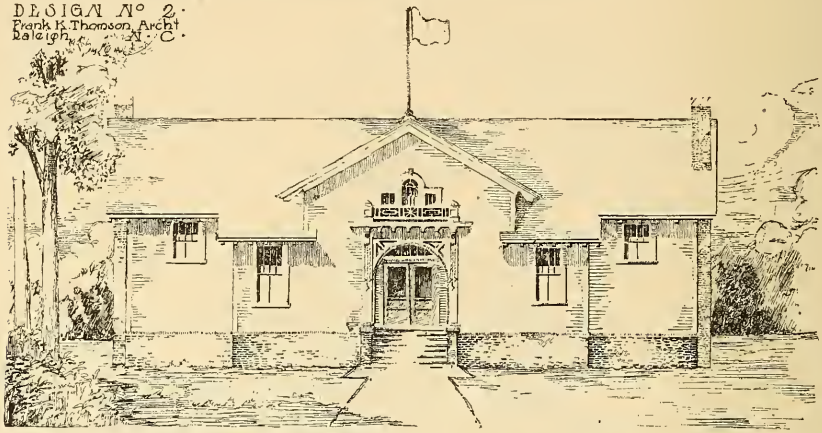
·FLOOR PLAN·No·1

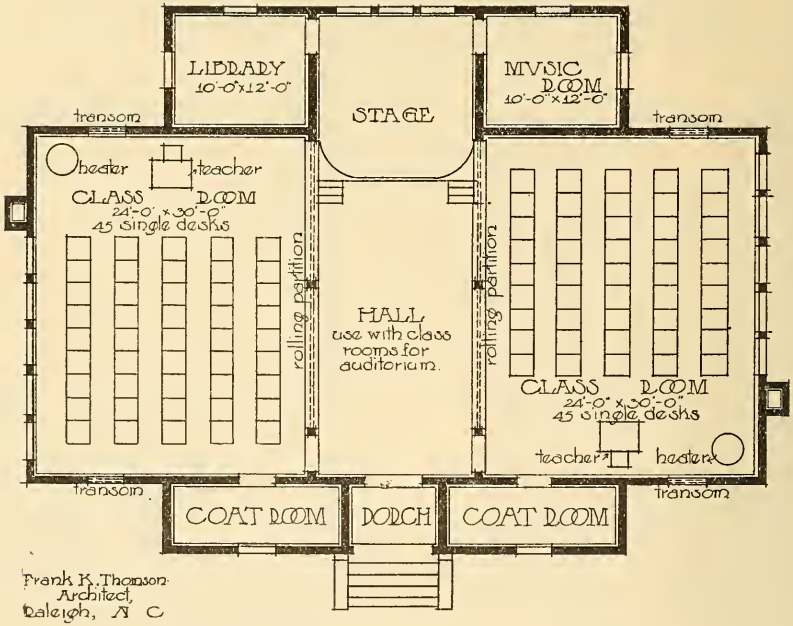


FLOOR·PLAN·No·1-A·

this plan, giving the two-room building No. 2-B; or if still more room is required, two rooms can be added to plan No. 1-A, giving plan No. 3-A.

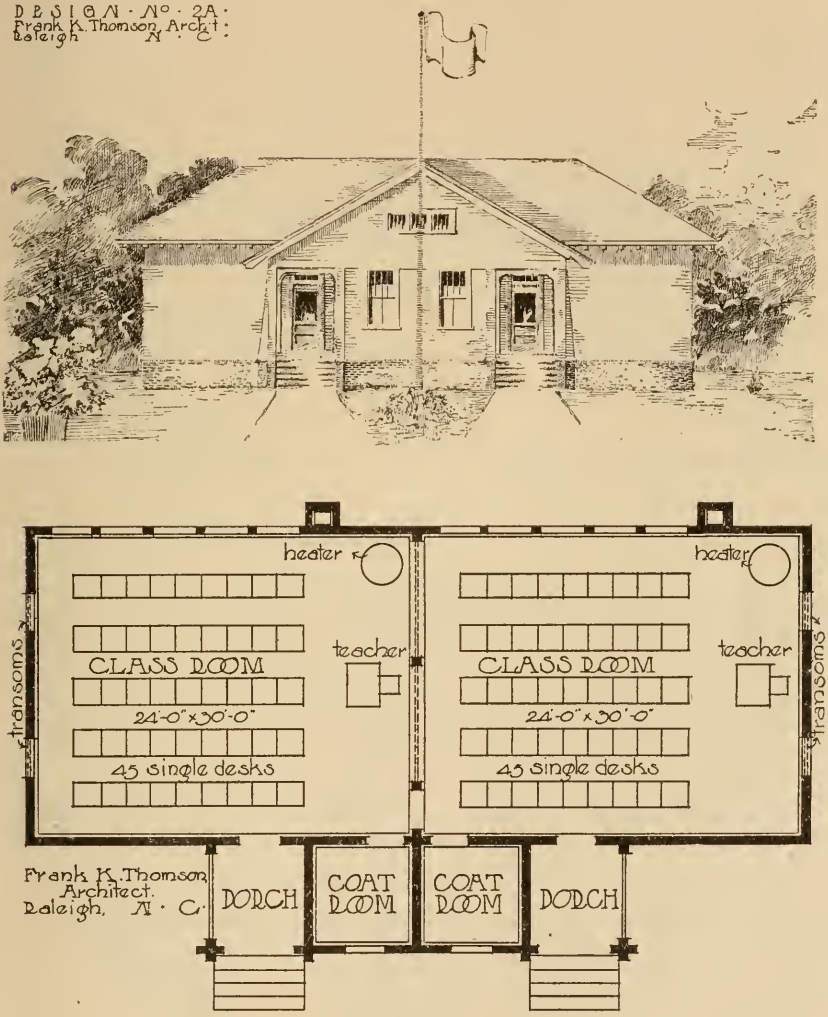
Plans and designs Nos. 2 and 2-A show two-room buildings of different arrangement and appearance. Plan No. 2 is arranged so that the two class-rooms and hall can be thrown together, forming an auditorium with stage at end of hall. The seats for use in hall can be stored under the stage when not in use. This plan also provides a music-room and library.





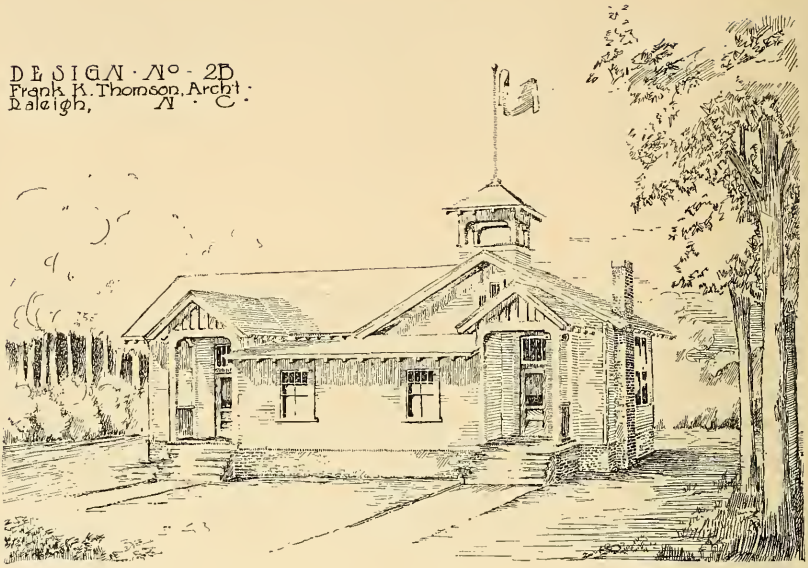
FLOOR · PLAN · N° · 2.

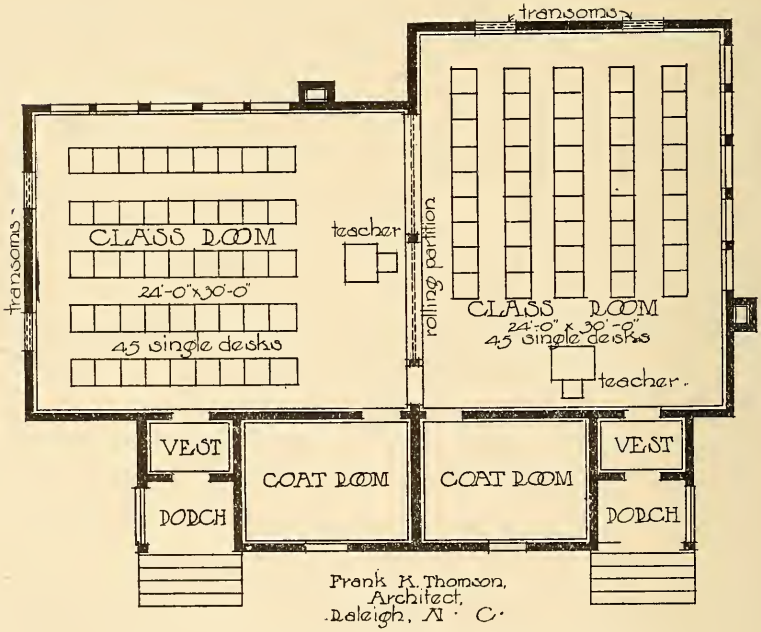
Plans and designs Nos. 3 and 3-A give a choice of three-room buildings. Plan No. 3 is arranged so that all three class-rooms may be thrown together for auditorium. The stage should be provided with folding doors, and used as a coat-room during school hours. This plan also shows a music-room and library.



FLOOR · PLAN · NO 2-A

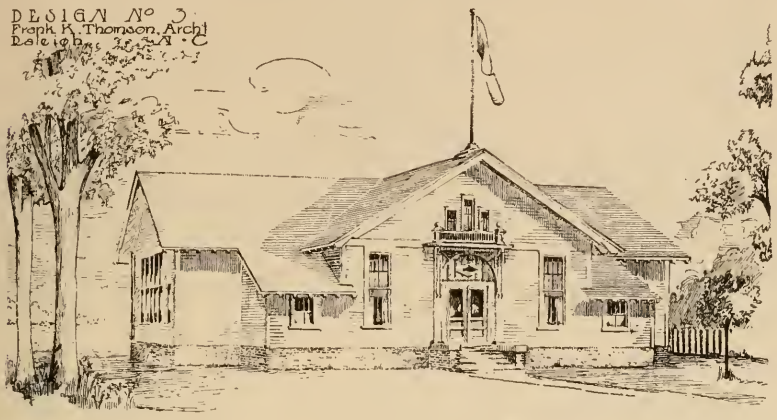
Plan and design No. 4-A show a building which may be erected as a whole, or the two class-rooms, hall, and office on first floor, and auditorium on second floor, can be built and the two class-rooms on first floor and two class-

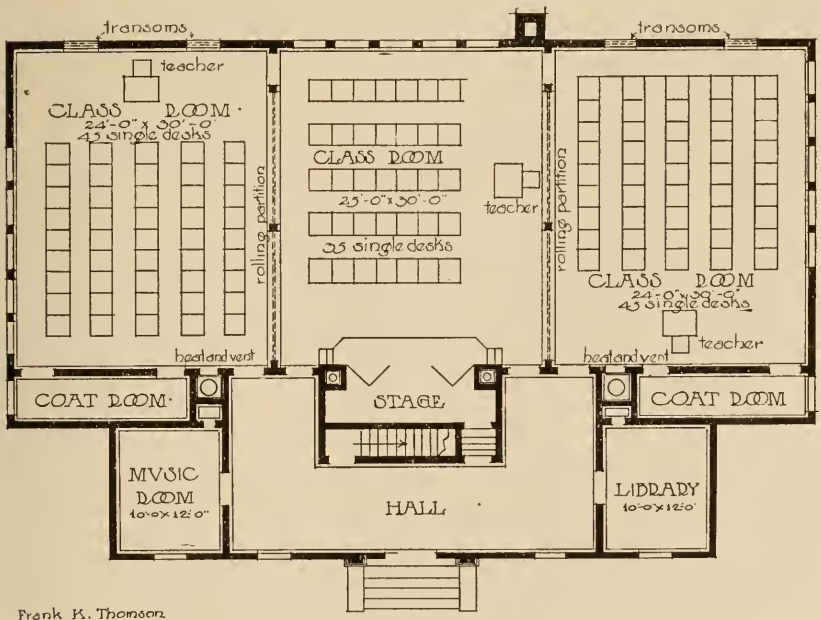




FLOOR · PLAN · N° · 2D

rooms on second floor added as the additional rooms are required. When the front portion is built and the rear portion added as suggested above, the office on first floor should be removed and a side entrance and stairway put in to correspond to entrance and stairway on opposite side. The room at rear of first-floor hall may be used for an office, and the room above on

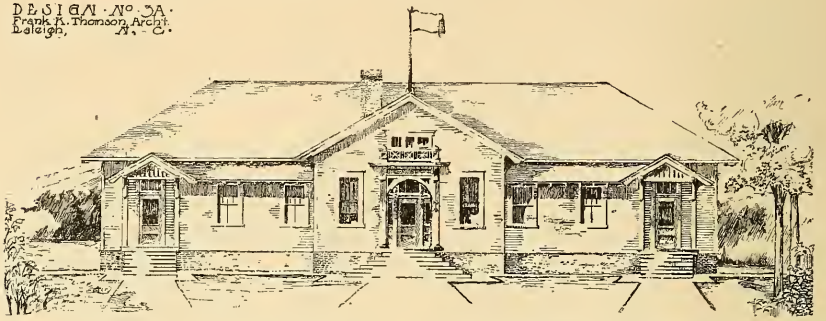


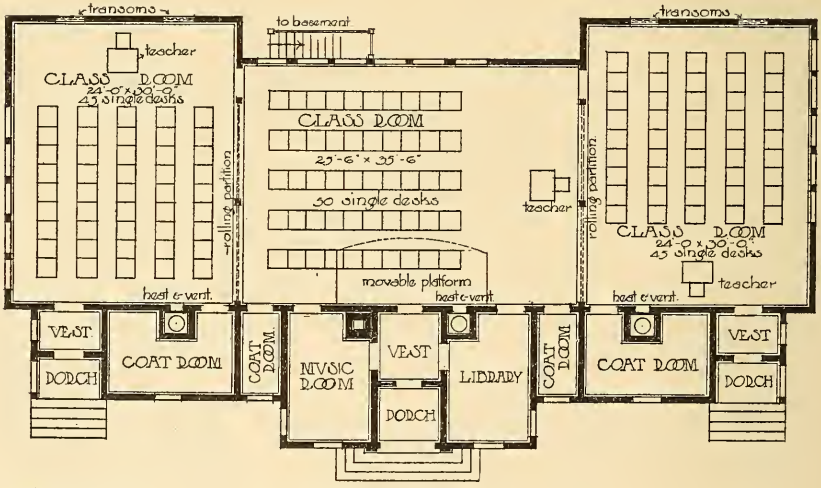


FLOOR PLAN No 3

second floor used as a library, or music-room. Where rooms are required for special work, the two rear class-rooms on second floor may be fitted up for domestic science and laboratory work, and the space between same used for domestic science dining-room, reception room and storage rooms. When the rooms are used in this manner, brick smoke and vent flues should

be provided for the domestic science room, and brick or galvanized iron flue, connected up with ventilator on roof for laboratory. A russia iron or galvanized iron hood should be placed over the range in domestic science department, and over tables in laboratory. The hoods should be connected up to vent flues to carry off the smoke and gases.





Frank K. Thomson
Architect
Raleigh, N. C.

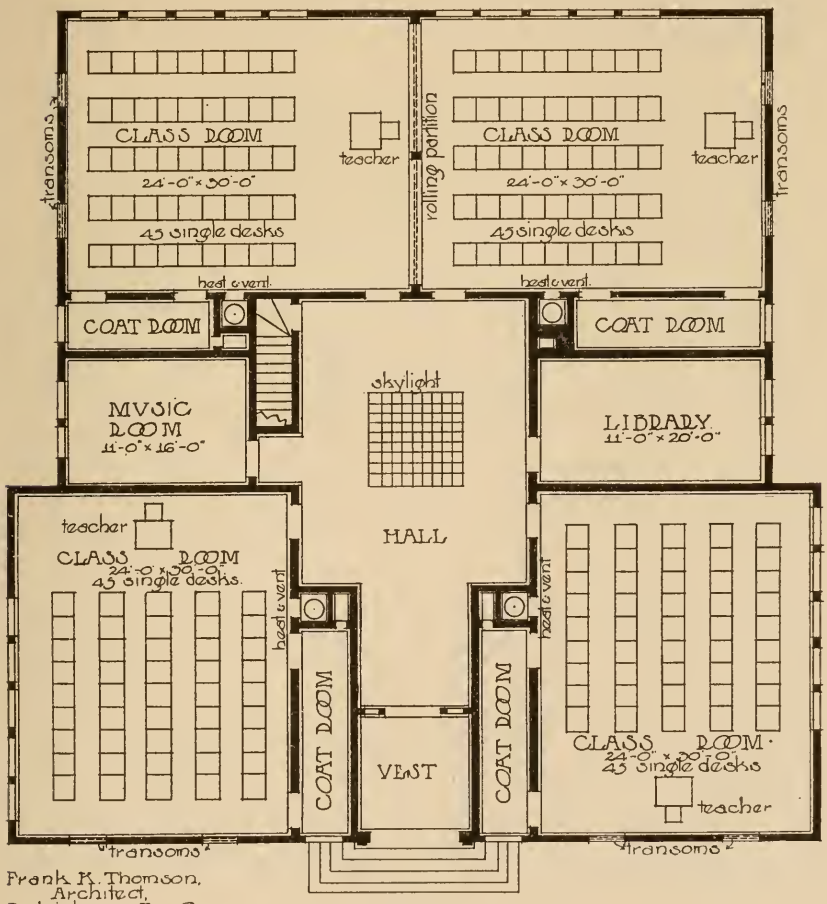
FLOOR · PLAN. · No. 3A

Where a bell tower or belfry is desired, the simple square design shown with designs Nos. 1 and 2-B can be used.

It is recommended, where two or more rooms are to be thrown together for use as an auditorium, that the desks which do not face the stage be movable, so that they may be turned in that direction.

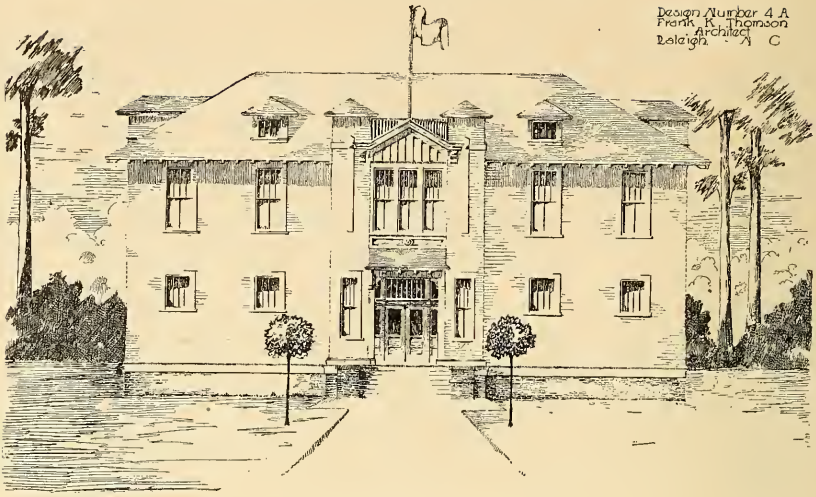
Plan and design No. 5 show a teacher's home for County High Schools. This plan provides a large living-room with an open fireplace and book cupboards at each side, a front porch and an inclosed rear porch, which may be used as a summer dining-room or a sleeping porch, two bedrooms, a bath-

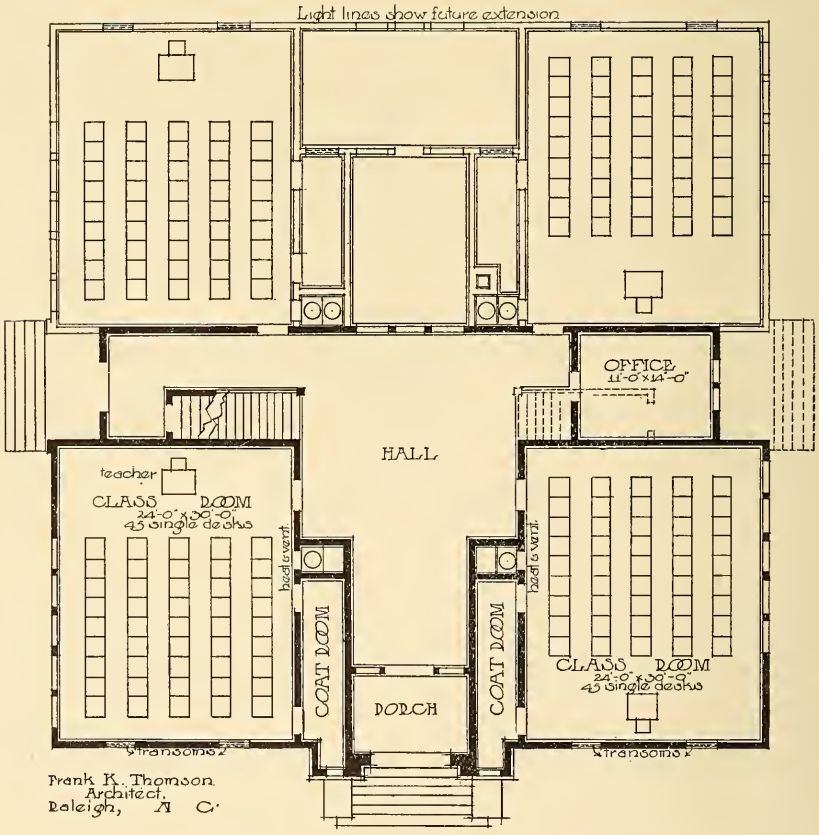
DESIGN No 4
Frank K. Thomson. Archt.
Raleigh. N C.



Frank K. Thomson,
Architect,
Raleigh, N C

FLOOR PLAN No. 4

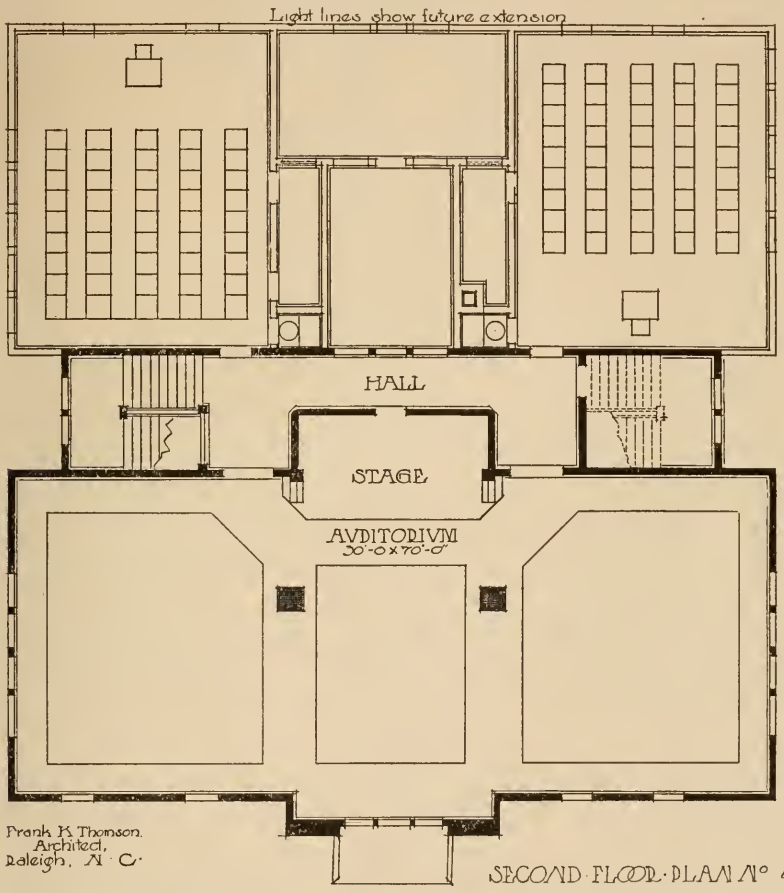




FIRST FLOOR PLAN No. 4A.

room, dining-room, kitchen, pantry, and storage-room on first floor. A stairway can be run in position shown on plans, and three bedrooms fitted up on second floor if required.

Plans and design No. 7 show a girls' dormitory for county high schools. The first floor, in addition to bedrooms for girls, contains a dining-room to accommodate the twenty occupants of the building and an equal number of boys which will be provided for in separate buildings; a kitchen, a storage and serving room and a cooking laboratory. The second floor contains double and single bedrooms for girls.



SECOND FLOOR PLAN N° 4-A.

The cooking laboratory shows an arrangement of equipment suggested by the best authorities. The tables are placed around three sides of a square with an open space in the center for the teacher and the necessary work-table. The teacher's desk, range, sink, and cupboards (see page 48) are conveniently located on the outside walls of the room.

It is recommended that Domestic Science equipment especially manufactured for this work be provided in the same manner that modern school equipment would be provided in class-rooms.

Plans and design No. 8 show a one-story two-room dormitory to accommodate four boys, two boys in each room. One or more buildings can be erected as the growth of the institution may demand.

COST OF BUILDING.

The cost of the buildings illustrated will vary greatly, owing to the difference in the price of labor and materials in different sections of the State, the distance materials will have to be hauled, and the ability of the contractors bidding to handle the work economically. They will cost no more than poorly arranged buildings of the same size and construction.

In comparing contract prices with the cost of buildings already erected, it will be well to examine carefully the specifications and working drawings, and note the materials and construction called for.

The class-rooms shown are planned to use standard school desks. The following table gives the dimensions:

	No. or Size of Desk.	Height of Seat from Floor.	Width of Top.	Height of Top of Desk from Floor.	Distance of Desks Apart, Measuring from Back to Back.	Length Single.	Length Double and Double Separate.	Age of Pupil Occupying Seat.
		Inch.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
Normal	1	17	15	30	28	24	40	16 to 21
High School	2	16	15	28	28	24	40	14 to 18
Grammar	3	15	13	26	25	21	38	11 to 15
First Intermediate	4	13½	13	24	25	21	38	9 to 13
Second Intermediate	5	12½	11	23	22	18	36	7 to 10
Primary	6	11	11	22	22	18	36	5 to 8

The approximate number, location, and size of desk to be used in each class-room is marked on floor plans. Single desks of the adjustable type are recommended, and not more than 45 single desks should be placed in any one standard class-room.

Ceilings.—In order to give the required cubic contents to each pupil, the ceilings in the standard class-rooms should be not less than 12 feet 6 inches high. With this height ceiling, a standard class-room, 24x30 feet in dimensions, will afford 200 cubic feet of air and 16 square feet of floor space for each pupil.

Lighting.—As noted above, the light, according to the best authorities, should come from the left side of the pupil only, and the glass surface should equal from one-sixth to one-fourth the floor area of the room. The windows should be arranged close together with narrow mullions, which will not obstruct the light or cast shadows in the room. The windows should also be placed well toward the rear of the room, so that the light will not be in the faces of the children on the front seats.

Transoms.—It is thought desirable in our Southern climate to place at least two transoms or short windows in the end of each class-room to afford cross ventilation during the summer months. Where the transoms come in the front wall of the class-rooms, they should be covered with heavy dark colored shades.

Courtesy Virginia School Supply Co., Richmond, Va.

SANITARY ADJUSTABLE DESK.

The main class-room windows should be set 3 or 3½ feet above the floor, and the window head should come within 12 inches of the ceiling.

Transoms in end of class-rooms should be set near the ceiling, or so that heads line up with main windows.

The inside sills or stool of all transoms should be set at an angle sloping inwards to prevent lodgment of dirt and facilitate cleaning.

Blackboards.—The blank walls on one or more sides of the schoolroom should be fitted with slate or good composition blackboards, with chalk trough at base. The boards should be from 3 to 4½ feet high, and set from 2 feet 1 inch to 2 feet 4 inches above the floor for primary pupils, and 2 feet 6 inches above the floor for intermediate pupils. For plan No. 3, a blackboard should be arranged for on the inner surface of the rolling partitions, to be used for the center class-room.

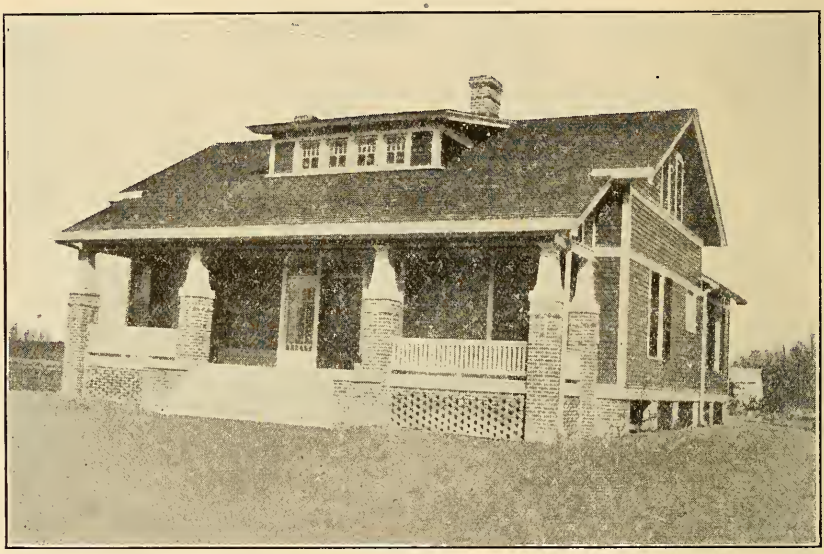
HEATING AND VENTILATION.

For heating the smaller buildings, a jacketed stove or ventilating heater is recommended. A number of heaters of this type have been placed on the market, among them being the heater manufactured by the Waterman-Waterbury Company, of Buffalo, New York. This heater gave satisfactory results in comparison with other heaters tested.

The construction and operation of these heaters is generally as follows: The heater consists of a cast-iron stove or furnace, surrounded by a heat-proof casing, resting on the floor or supported above same. The heater is connected into a 12x16-inch brick flue, which carries both smoke and foul air. The heater is placed near the outside wall of the class-room, with a fresh-air duct leading from a grating in the wall to the base of the heater.

This duct carries the outside air to and discharges it over the hot surface of the cast-iron body of the heater. A register is placed in the face of the flue near the floor line, to carry out the foul air from the room.

When a fire is started in the heater, the air in the flue and the walls of the flue become heated by having the hot gases from the smoke pipe pass through same. This causes an upward draft in the flue, which draws the foul air out of the room through the register at the floor line. As the foul air is exhausted, an equal volume of fresh air is drawn into the room through the duct and grating in the outside wall. This air is warmed as it passes over the heater and is distributed through the room.



TEACHERS' HOME, DESIGN NO. 5.

Some of the advantages of a heater of this type are:

A more uniform temperature in the room, the pupils near the heater being protected from the heat by the casing around same.

A constant supply of fresh air, which is drawn in through the fresh-air inlet and warmed by passing over the heater.

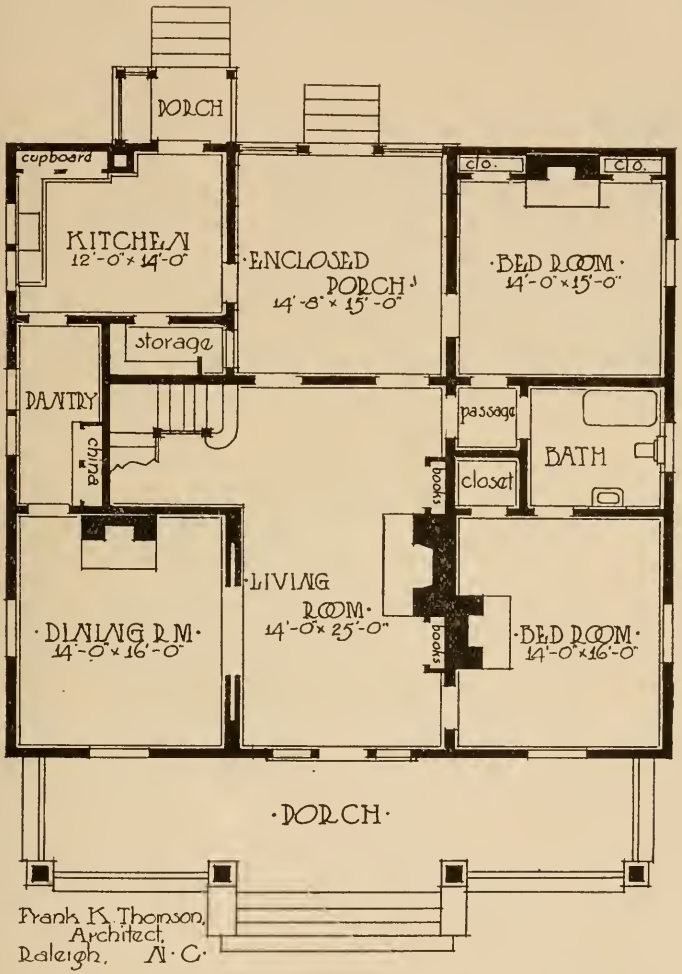
The ability to exhaust the foul or vitiated air from the room through the register at floor line in the base of the flue.

In buildings with three or more class-rooms, warm-air furnaces or low pressure steam heating plants may be used to advantage.

The heaters should be located in heater rooms, in basement provided with brick walls, concrete floors, and ceilings protected with heavy asbestos board or sheet as a protection against fire.

When warm air or steam heating plants are installed, a system of ventilation should be provided for each class-room. This may be done by providing ventilating ducts on the inside wall of the class-room, and carrying the warm-air pipe up inside of same for warm-air heating, or, if steam is used, an aspiring coil may be placed in the ventilating ducts. This will warm

the air in the ducts and cause an upward draft, which will draw the vitiated air out of the room at the floor line. The ventilating ducts may be discharged into the open attic, and a syphon ventilator placed on roof with sufficient area to exhaust same.



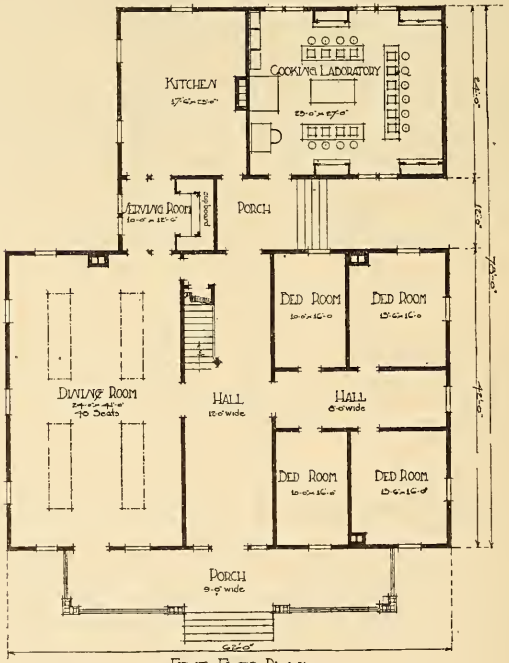
TEACHER'S HOME FOR COUNTY HIGH SCHOOL.

On the floor plans for three-room buildings, and larger, the heat and vent ducts for hot-air heating are indicated on plans. The circle on the inside of the square indicates the position of the warm-air pipe inside the vent duct.

For a standard class-room on the first floor, the warm-air pipe should be not less than 25 inches in diameter, and the vent duct 30x30 inches, inside measurement. The hot-air register should be 28x32 inches, and the vent

grille 26x26 inches. The warm-air register should be placed about 8 feet above the floor, and the vent grille near the floor line. If piping and registers of the above sizes are properly connected up to a furnace with ample grate surface, a fresh-air inlet of proper area provided, and a siphon ventilator placed on roof to exhaust the foul air from the vent ducts, the heating

PLAN No. 7.

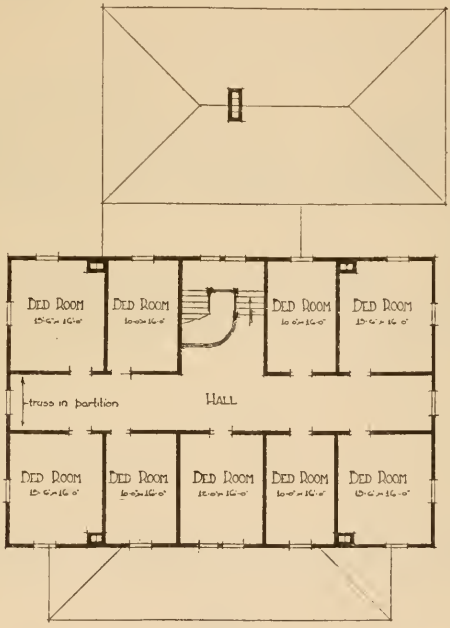


FIRST FLOOR PLAN
DORMITORY FOR GIRLS COUNTY HIGH SCHOOLS
F.K. Thomson Architect & Engineer Raleigh N.C.

plant will warm the building to seventy degrees and provide 30 cubic feet of fresh, warmed air per minute, for each pupil in the room, based on forty-five pupils in each standard class-room.

Where a warm air or steam heating plant is installed, a complete layout and specification, covering the construction and capacity of heater to be used, size and area of piping, registers, and grilles, and the installation of the work, should be required of each bidder.

The temperature in class-rooms should be maintained at from 68 to 70 degrees. A complete record should be kept of the temperature, taken at least four times each day, by a monitor who should have charge of the heater and windows.



Second Floor Plan
Dormitory for Girls' County High Schools
F K Thomson, Architect & Engineer Raleigh N C

In case it is desired to heat the larger buildings with stoves in place of furnaces, 12x16-inch smoke flues should be provided, located at about the same relative position as the smoke flues shown on the smaller building.

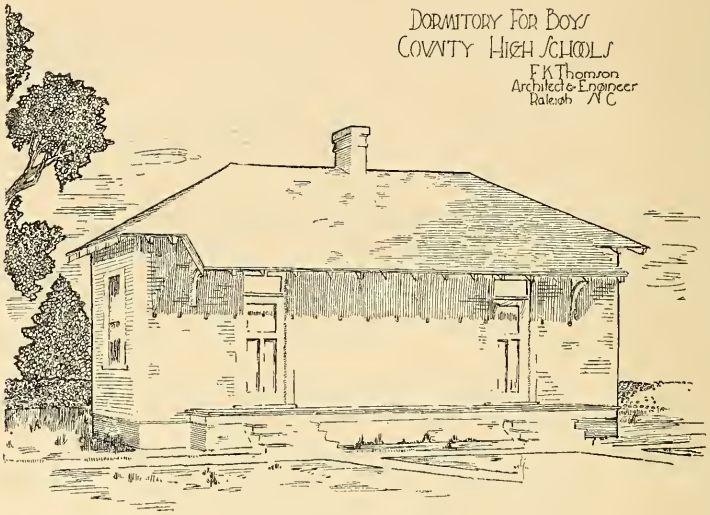
MATERIALS, DRAWINGS, ETC.

Following will be found a specification, with bill of material, for each building.

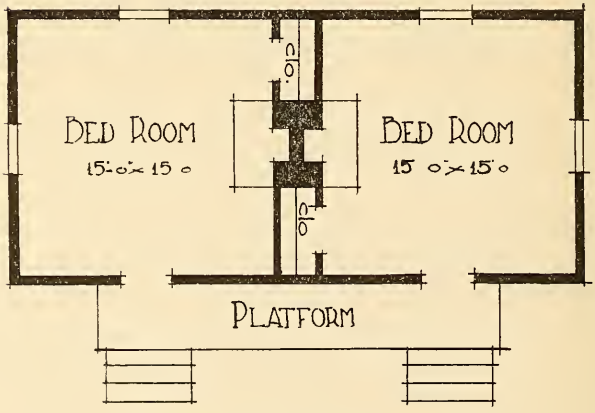
Complete working drawings, consisting of foundation plan, plan of each floor and roof, and four elevations, all drawn to one-quarter-inch scale, with

full size and large scale detail drawings fully illustrating the work to be done, can be had by addressing the architect, Frank K. Thomson, Raleigh, N. C.

With the above mentioned complete drawings, low bids can be secured from local contractors and the buildings erected without chance of mistakes and misunderstandings.



DESIGN NO. 8.



PLAN NO. 8.—BOYS' DORMITORY.

SPECIFICATION.

This specification is intended to embrace all materials and labor necessary for the construction and completion, ready for occupancy, of a..... .....room frame school building, for the..... ..... School, ... District .... Township, ... County, of North Carolina.

The drawings furnished consist of:

Floor plans.
Foundation and roof plans.
Four elevations and miscellaneous details.

All materials must be strictly as herein specified. All sizes and dimensions must be strictly adhered to, and the construction must be carried out in a workmanlike and substantial manner, to the entire satisfaction, approval and acceptance of the County Superintendent of Public Instruction and County Board of Education.

Upon completion of the work, the contractor must remove all rubbish and surplus building materials from the premises, and thoroughly clean up the building, leaving all floors broom-clean.

The County Board of Education reserves the right to reject any workmanship or materials it may deem not in strict accordance with the plans and this specification, and any such rejected materials must be replaced at the expense of the contractor.

The contractor will assume all risks and bear all loss occasioned by neglect, accident, fire, or any other cause, until the building has been completed and accepted by the County Superintendent.

The County Board of Education reserves the right to make any additions or alterations at any time during the progress of the work, and if changes are made, the value of same shall be added to or deducted from the contract price.

All bids for the erection of this building shall be made with the understanding that the right is reserved by the County Board of Education to reject any or all bids, or to accept other than the lowest.

EXCAVATION.

Excavate for all walls, piers, and chimneys to the depth shown on section or to such depth as may be found necessary for satisfactory foundation. Fill in around walls and piers, and grade surplus earth around the building.

BRICKWORK.

Build foundation walls, piers, and chimneys to the dimensions and heights shown on drawings, of strictly hard-burned brick, laid up in lime mortar, one part lime to three parts sand.

All walls, piers, and chimney butts to have footing courses stepped out as shown on section. Lay all brick with flushed solid joints, plumb and to line, so that timbers rest on walls and piers without blocking. Mortar joints on exposed work shall be neatly trowel-jointed. All brickwork must be properly bonded.

SMOKE AND VENT FLUES.

Build flues in the positions shown of hard-burned brick. Flues for classroom heaters shall be 12x16 inches inside dimensions, with opening for vent register at floor line. Carry up flues straight and full size for their entire height, carefully pargeted on inside. Where hot-air furnaces or steam heating plants are installed the flues shall be of a size to accommodate the heater used.

LATHING AND PLASTERING.

All laths for plastering must be No. 1 pine lath, laid ⅜ inch apart, breaking joists every 18 inches and over all openings. All angles must be made solid by the carpenter before lathing. Plaster the walls and ceilings throughout the building. The plaster used must be an approved cement or hard wall plaster, manufactured from calcined gypsum rock, by a well-known and reputable manufacturer. Hair to be used as a binder and clean sharp sand mixed in strict accordance with the manufacturer's printed directions. Finish all plastered walls and ceilings with a good sand finish of lime-putty plaster paris, and white or light sand floated to true and even surface. Lay all plastering in best manner, well up to grounds, with angles straight and true. Plastering on outside walls shall extend to the floor, behind wainscoting and base. Do all patching after carpenters and leave plastering whole and sound at the completion of the building.

ROUGH AND DIMENSION TIMBERS.

All rough and dimension timbers shall be merchantable grade and shall be cut from long-leaf or close-grained original-growth short-leaf pine.

Second-floor joists in two-story buildings, studding and wall plates in all buildings, and truss timbers, will be dimension timbers.

Sills and first-floor joists shall be heart timbers—sizes as follows:

Girders, 6x10 inches, on edge.
Sills, 6x10 inches, on edge.
First-floor joists, 2x10 and 2½x10.
Second-floor joists, 2x14.
Ceiling joists, 2x8.
Studding, 2x6.

Floor joists, ceiling joists, and studding spaced 16 inches on centers.

Rafters, 2x6, 2 feet on centers, with 1½x8-inch king post and 1½x6-inch strut on each full-length rafter.

FRAMING.

Joists shall be framed with crowning edge upwards, and bridged with 1x4-inch bridging. Studding shall be doubled at all openings. Plates shall be doubled and well spiked together. The rafters and walls over rolling partitions shall be framed and trussed, as shown by detail drawings. Set partitions plumb and straight to form the various rooms.

GROUNDS.

Put up grounds 13-16x2 inches for the finish of all base. Casing, wainscoting, etc., grounds to be put up plumb and to line with angles, properly squared.

SHEATHING AND SUBFLOOR.

Sheathe the walls from sill to plate, the gables and the floor joists throughout the building, with sound surface sheathing ⅞-inch by not over 10-inch widths. Sheathing to be put on diagonally of timbers, closely driven up and strongly face-nailed.

CORNICE.

Form all cornice of wood, as shown by detail drawings. Cornice to be run to perfect line, supported on suitable lookouts. The cornice, unless otherwise shown, will be an open cornice with dressed rafter ends. The exposed sheathing to be dressed and beaded, and have the necessary moldings.

ROOF.

All roof surface not otherwise specified shown shall be covered with 4x8 clear heart-pine shingles, laid 5½ inches to the weather. Lay shingles on ⅞x4-inch surfaced shingling strips, spaced 3 inches apart. Flat roofs and decks and tower floors, where shown, shall be sheathed with ⅞x10-inch surfaced boards, closely driven up and face-nailed and covered with flat-seam tin roof, out of high-grade stamped roofing plates carrying 30 pounds coating per box. Where skylights are shown, they will be constructed of No. 26 gauge galvanized iron for frame, with double drip bars, glazed with ribbed skylight glass. All joints to be properly riveted and soldered and the skylights flashed at roof-line to insure a weather-tight job. The skylights to have louvre slats, or be ventilated as shown by detail drawings. Place at the ceiling line under skylights, ceiling sash, glazed with double strength sanded glass, the double openings to be cased and molded.

Lay valleys with same weight tin as specified for roofing, 14 inches wide. Flash against flues and where roof joins vertical walls with tin flashings, and leave secure from leaks.

All tin shall be painted one coat iron oxide and linseed oil paint on underside before it is laid.

EXTERIOR FINISH.

All exterior finish shall be No. 1 thoroughly seasoned yellow pine.

WINDOWS AND DOOR FRAMES.

All windows shall have frames with ⅞-inch pulley stiles, fitted with best 2-inch steel sash pulleys, 1¼x4½-inch outside casings, 1¾-inch sill and ⅞-inch subsill, 1¾ check-rail windows, hung with best quality braided sash cord to cast-iron weights of a size to properly balance sash.

Set windows on slat ventilators and sash for gables and dormers where shown. Door frames shall have 1¾-inch jambs, rebated to receive doors. Outside doors to have 1¼x4½-inch outside casings, 1¾-inch heart-pine sills. Vestibule and schoolroom doors to have transoms. For size of windows and transsoms, see floor plans.

SIDING AND BUILDING PAPER.

Cover the exterior walls of the building with No. 1 bevel yellow pine siding 5½ inches wide, laid 4½ inches to the weather.

Lay under siding one thickness of an approved waterproof building paper.

PORCHES AND TOWER.

Furnish and set all columns, pilasters, railing, balusters, brackets, etc., as shown on drawings. Porch floors shall be 5-4x3¼-inch No. 1 heart pine, laid in full lengths, closely driven up and blind-nailed. The porches shall be ceiled overhead with 11-16x3¼-inch double-beaded ceiling, with molding, in angles.

The entrance steps shall be built of three 1¼x4½-inch heart-pine strips, spaced ¼ inch apart for treads, ⅞x7½-inch risers, supported on 2-inch heart-pine carriages, spaced 2 feet on centers, carriages to be cased.

FINISHED FLOORS.

The finished floors throughout shall be 13-16x3¼-inch No. 1 yellow pine, closely driven up and blind-nailed; all head joints and uneven places dressed smooth as soon as laid.

Lay between subfloor and finished floor one thickness of deadening felt, weighing not less than 6 square feet to the pound. Finished floors shall not be laid until plastering is thoroughly dry.

INTERIOR FINISH.

All stock for interior finish shall be No. 1, thoroughly seasoned yellow pine, fashioned accurately, according to the detail drawings furnished for same, put in place in a neat and workmanlike manner.

DOORS.

All doors shall be of size and thickness shown on floor plans, blind-mortised and tenoned with flat cross panels. Outside doors shall be flush-molded; inside doors O. G. edge. All doors to be No. 1 oil-finish doors.

WAINSCOTING AND CASINGS, ETC.

The schoolrooms, vestibules and halls shall be wainscoted window-sill high, with worked wainscoting cap and base, or with a cement wainscot, at the option of the owners. Case up all openings with the finish detailed for same. Windows to have molded stool and apron. All stools, aprons, and moldings to be mitered and returned to wall line at ends.

Prepare walls to receive blackboards in the positions indicated, and put up molded chalk rail and cap molding after boards are set.

Cut mitered borders around all stair-well openings. Place base knobs with rubber tips for each door opening; also wood angle beads for all plastered corners.

Carpet strips or thresholds will not be used except for outside doors. For all interior doors, the flooring will be laid to run through under doors or a tight joint made in flooring.

STAIRWAY.

Build stairway for two-story building as shown by detail drawings. Set newels, hand-rail and balusters and ceil soffits with narrow beaded ceiling. Threads shall be 1¼ inches thick, strongly supported on 2-inch plank carriages.

ROLLING PARTITIONS.

Where rolling partitions are shown, they will be the partition manufactured by James G. Wilson, New York City, of Southern yellow pine, put up as per manufacturer's printed directions, and left in perfect working order.

HARDWARE.

Furnish and fix in place for single doors good quality 4¼-inch mortise knob locks, three lever tumblers, with 2¼-inch one-piece spun knobs, 2¼x7½-inch heavy bevel edge design rose and escutcheon. For outside doors, good quality cylinder mortise knob lock, three keys. Doors shall be hung on loose-pin steel butts, of a size to throw door clear of finish. Doors 7 feet high and over shall have three butts. Door transoms shall be hinged at bottom with loose-pin butts, and provided with suitable transom workers. Sash shall have one steel sash lock and two finger lifts, each window. All trim hardware shall be wrought brass, natural color, wheel finish.

Furnish and fix in place in each coat-room four dozen japanned wardrobe hooks.

Each coat-room will have two molded hook strips on side walls, to receive coat and hat hooks. Each strip to be not less than 10″ wide, and be provided with a double row of black japanned coat and hat hooks, the lower row of hooks to be set about 3 feet from floor, for primary pupils, and the upper row about 5 feet, for intermediate pupils.

PAINTING.

Properly prepare all woodwork for painting. Sandpaper smooth all rough surfaces. Putty up all nail holes and other defects. Prime all exterior woodwork as soon as put in place with body color thinned with pure linseed oil: *Provided, however*, that no woodwork shall be primed or painted while damp or during damp or rainy weather.

Paint the exterior of the building with two coats (in addition to priming coat) of an approved ready-mixed paint in such tints as may be selected. Paint all tin and galvanized iron work two coats of iron oxide paint.

Paint all interior woodwork, three coats of same make paints as specified for exterior. Give porch floors two coats of raw linseed oil.

GLAZING.

Prime the sash before glazing. All glass shall be properly bedded, sprigged, back-puttied and left whole and sound on completion of the work. Glaze the sash throughout with AA quality double-strength sheet glass.

The quantities called for in the following bills of material are based on the dimensions and construction shown by the working drawings and details mentioned on page 51, and any departure from this construction will change the quantities required. Only sufficient material is included to complete the work in accordance with these plans. No allowance is made for scaffolding or other outside uses. In framing, long timbers should be framed first; no long timbers should be cut to make short lengths until long timbers are all framed; this will apply to sills, girders, joists, studding, rafters, etc. In estimating quantities for brickwork, lots are considered level and buildings

set at the elevation above grade line shown on drawings. If lots are not level and buildings are set higher above grade, more brick will be required.

Plans Nos. 1, 1-A, 2, 2-A, 2-B, and 2-C are figured for brick piers for foundations, the space between piers to be boarded up as called for in specifications. Other plans are figured for 9-inch walls to grade line, with piers and 4-inch brick curtain walls between same above grade.

See one-fourth-inch scale working drawings and details for dimensions and style, and specifications for grade of all materials.

Where bills of materials mention windows, they will include frames, glazed sash, weights and cord, parting bead, stops and trim, as shown by detail drawings and as specified.

Doors will include frame, door, glazed transom, carpet strip and trim.

Bills of materials do not include materials for basements, plastering, and painting, tin and sheet-metal work or hardware.

BILL OF MATERIALS FOR ONE-ROOM SCHOOL BUILDING, PLAN No. 1.

7,000 brick.
7 barrels lime.
5 yards sand.
1 6-inch stovepipe thimble.
190 lineal feet 6x10 sills.
350 feet boarding between piers.
46 pieces 2x10x12 floor joists.
24 pieces 2x10x10 floor joists.
160 lineal feet 1½x3 joist bearer.
250 lineal feet 1x4 bridging.
525 lineal feet ⅞x2-inch grounds.
168 pieces 2x6x13 studding.
350 lineal 2x6 plates.
32 pieces 2x8x25 ceiling joists.
42 pieces 2x6x16 rafters.
160 lineal feet cornice.
20 pieces 1½x8x8 king posts.
20 pieces 1½x6x12 struts.
2,750 feet ⅞-inch surfaced sheathing.
1,100 feet ⅞x4-inch shingling strips.
10,500 shingles.
5 windows, 12 lights 12x24.
2 windows, 2 lights 32x36, divided, see details.
2 triple slat ventilators for gables, 2 transoms 38x48 divided.
1 outside door 3-0x7-0x0-1¾, sash door, 40-inch transom glass, divided.
2 inside doors 3-0x7-0x0-1¾, 42-inch transom glass, divided.
170 lineal feet main cornice, facia and moldings.
110 lineal feet 1¼x4½-inch corner casings.
60 lineal feet 1⅛-inch quarter round.
24 lineal feet 1¼x¼-inch angle bead.
130 lineal feet water table.
2,000 feet siding.
1,800 feet waterproof building paper.

12 pieces 1¼x4x9 treads for front steps.
5 pieces ⅞x7½ risers.
2 pieces 2x12x16 carriages.
1,200 feet 13-16x3¼-inch flooring.
1,000 square feet of deadening felt.
580 feet 11-16x3¼-inch ceiling.
40 lineal feet ⅞-inch quarter round.
2 brackets and hood over front door.
102 lineal feet wainscoting, cut window-sill high, with cap and base.
54 lineal feet chalk trough and cap.
1 flag pole 14 feet long, 12 feet turned.

BILL OF MATERIALS FOR ONE-ROOM SCHOOL BUILDING, PLAN No. 1-A.

7,000 brick.
7 barrels lime.
5 yards sand.
1 6-inch stovepipe thimble.
190 lineal feet 6x10 sills and girders.
16 lineal feet 4x8 sills for porch.
140 lineal feet 1½x3 joist bearer.
210 lineal feet 1x4 bridging.
50 pieces 2x10x12 floor joists.
12 pieces 2x10x10 floor joists.
3 pieces 2x8x16 porch joists.
385 lineal feet ⅞x2-inch grounds.
110 pieces 2x6x13 studding.
50 pieces 2x6x10 studding.
320 lineal feet 2x6 wall plates.
26 pieces 2x6x25 ceiling joists.
10 pieces 2x6x14 ceiling joists.
4 pieces 2x6x16 ceiling joists.
34 pieces 2x6x16 rafters.
16 pieces 2x6x12 rafters.
8 pieces 1½x8x16 king posts.
16 pieces 1½x6x12 struts.
350 feet boarding between piers.
2,600 feet ⅞-inch surfaced sheathing.
1,200 feet ⅞x4-inch shingling strips.
11,000 shingles.
1,950 feet siding.
1,550 square feet building paper.
5 windows, 12 lights 12x24.
1 window, 2 lights 32x36, see details.
1 outside door 3x7x1¾—40-inch transom glass.
2 inside doors 3-0x7-0x0-1¾, 42-inch transom glass.
130 lineal feet main cornice, facia and moldings.
50 lineal feet coat-room and porch cornice and moldings.
150 lineal feet 1¼x4½-inch corner casings.
75 lineal feet 1⅛-inch quarter round.

25 lineal feet 1¼x1¼-inch angle bead.
130 lineal feet water table.
90 feet 5-4x3¼-inch porch floor.
1,150 feet 13-16x3¼-inch flooring.
1,000 square feet deadening felt.
400 feet 11-16x3¼-inch beaded ceiling.
14 lineal feet porch sill casing and mold.
28 lineal feet porch plate casing and mold.
4 lineal feet top and bottom rail with balusters.
1 column.
1 half column.
96 lineal feet 1¼x4 treads outside steps.
50 lineal feet ⅞x7½ risers outside steps.
2 pieces 2x12x12 carriages.
130 lineal feet wainscoting, cut window-sill high, with cap and base.
50 lineal feet chalk trough and mold.

BILL OF MATERIALS FOR TWO-ROOM SCHOOL BUILDING, PLAN No. 2.

12,500 brick.
12 barrels lime.
7 yards sand.
2 stovepipe thimbles.
425 lineal feet 6x10 sills and girders.
430 feet boarding between piers.
425 lineal feet 2x3 for frames between piers.
148 pieces 2x10x12 floor joists.
32 pieces 2x10x16 floor joists.
4 pieces 2x8x16 porch joists.
530 lineal feet 1½x3-inch joist bearer.
550 lineal feet 1x4-inch bridging.
750 lineal feet ⅞x2-inch grounds.
224 pieces 2x6x13 studding.
150 pieces 2x6x12 studding.
350 lineal feet 2x6 plates.
52 pieces 2x8x26 ceiling joists.
52 pieces 2x8x16 ceiling joists.
20 pieces 2x8x12 ceiling joists.
14 pieces 2x8x14 lookouts.
66 pieces 2x6x21 rafters.
40 pieces 2x6x16 rafters.
12 pieces 2x6x12 valley rafters.
34 pieces 1½x8x12 king posts.
30 pieces 1½x6x18 struts.
(See details for materials for truss over rolling partitions.)
6,750 feet ⅞-inch surfaced sheathing.
3,000 feet ⅞x4-inch shingling strips.
28,500 shingles.
3,250 feet siding.
2,700 feet waterproof sheathing paper.
10 windows, 12 lights 12x24, 4 transoms 38x48 divided.

9 windows, 2 lights 32x36 divided, see details.
1 triple window in gable.
1 double entrance door 2-6x7-0x0-1¾, 18-inch transom glass.
2 inside doors 3-0x7-0x0-1¾, two with transoms.
6 inside doors 2-10x7-0x0-1¾, two with transoms.
200 lineal feet 1¼x4½-inch corner casing.
300 lineal feet cornice.
100 lineal feet 1⅛-inch quarter round.
75 lineal feet 1¼x1¼ angle bead.
225 lineal feet water table.
125 feet 5-4x3¼-inch flooring.
3,250 feet 13-16x3¼-inch flooring.
2,500 square feet deadening felt.
985 feet 11-16x3¼ beaded ceiling.
75 lineal feet ⅞-inch quarter round.
Pilasters, newels, brackets, railing and cornice for entrance, see details.
120 lineal feet 1¼x4-inch treads porch steps.
50 lineal feet ⅞x7½-inch riser porch steps.
2 pieces 2x12x16 carriages.
150 lineal feet wainscoting, cap and base.
80 lineal feet chalk trough and cap.
1 flag pole 14 feet long, 12 feet turned.
2 sets "Wilson's" rolling partitions for opening between rooms.

BILL OF MATERIALS FOR TWO-ROOM SCHOOL BUILDING, PLAN No. 2-A.

8,600 brick.
8 barrels lime.
5 yards sand.
2 6-inch stovepipe thimbles.
254 lineal feet 6x10 for sills and girders.
36 lineal feet 4x8 sills for porch.
90 pieces 2x10x12 floor joists.
8 pieces 2x10x18 floor joists.
7 pieces 2x8x16 porch joists.
275 lineal feet 1½x3 joist bearer.
350 lineal feet 1x4 bridging.
550 lineal feet ⅞x2 grounds.
190 pieces 2x6x13 studding.
24 pieces 2x6x16.
400 lineal feet 2x6 plates.
48 pieces 2x8x25 ceiling joists.
64 pieces 2x6x16 rafters.
4 pieces 2x8x18 hip and valley rafters.
30 pieces 1½x8x8 king posts main roof.
60 pieces 1½x6x9 strut posts main roof.
60 pieces 2x3x16 frames between piers.
285 feet boarding between piers.
2,750 feet siding.
2,250 square feet waterproof building paper.

(See details for materials for truss over rolling partition.)
4,000 feet ⅞ surfaced sheathing.
2,000 feet ⅞x4 surfaced shingling strips.
14,000 shingles.
10 windows, 12 lights 12x24.
2 windows, 2 lights 32x36 divided, see details.
2 outside doors 3-0x7-0x0-1¾, 40-inch transom glass.
3 inside doors 2-10x7-0x0-1¾, 42-inch transom glass.
210 lineal feet each member main cornice.
50 lineal feet belt over porches.
200 lineal feet 1¼x4½-inch corner casings.
75 lineal feet 1-inch quarter round.
25 lineal feet 1¼x1¼-inch angle bead.
1 triple window for front gable.
300 feet 5-4x3¼-inch porch flooring.
1,850 feet 13-16x3¼-inch flooring.
1,400 square feet deadening felt.
660 feet 11-16x3¼-inch beaded ceiling.
16 lineal feet top and bottom porch rail with balusters.
40 lineal feet sill casing and molding.
24 pieces 1¼x4x7 for treads outside steps.
8 pieces ⅞x7½x7 for risers outside steps.
2 pieces 2x12x16 carriages.
8 sawed brackets for porch.
190 lineal feet water table.
160 lineal feet of wainscoting, cut window-sill high, with cap and base.
92 lineal feet chalk trough and cap.
"Wilson's" rolling partition for opening between class-rooms, partition to have movable post in center.
Get exact dimensions from plans.

BILL OF MATERIALS FOR TWO-ROOM SCHOOL BUILDING, PLAN No. 2-B.

12,500 brick.
12 barrels of lime.
7 yards sand.
2 6-inch stovepipe thimbles.
340 lineal feet 6x10 for sills and girders.
28 lineal feet 4x8 porch sills and girders.
312 lineal feet 1½x3 joist bearer.
450 lineal feet 1x4 bridging.
1,000 lineal feet ⅞x2-inch grounds.
104 pieces 2x10x12 floor joists.
30 pieces 2x10x12 floor joists.
6 pieces 2x8x10 porch joists.
240 pieces 2x6x13 studding.
480 lineal feet 2x6 plates.
92 pieces 2x6x16 rafters.
14 pieces 2x6x12 rafters.
52 pieces 2x8x25 ceiling joists.

36 pieces 2x8x12 ceiling joists.
16 pieces 1½x8x16 king posts.
34 pieces 1½x6x18 struts.
400 feet boarding between piers.
2,750 feet siding.
2,300 square feet waterproof building paper.
(See dimensions for materials for truss over rolling partition.)
4,250 feet ⅞-inch surfaced sheathing.
2,400 feet ⅞x4-inch shingling strips.
22,000 shingles.
10 windows, 12 lights 12x24.
2 windows, 2 lights 32x36 divided.
4 transoms 38x48 divided.
2 triple windows for gables.
2 outside doors 3-0x7-0x0-1¾, transoms.
5 inside doors 2-10x7-0x0-1¾, transoms.
350 lineal feet cornice.
200 lineal feet 1¼x4½-inch corner casings.
100 lineal feet 1⅛-inch quarter round.
60 lineal feet 1¼x1¼ quarter angle bead.
200 lineal feet water table.
175 feet 5-4x3¼-inch porch flooring.
2,350 feet 13-16x3¼-inch flooring.
2,000 square feet deadening felt.
1,250 feet 11-16x3¼-inch beaded ceiling.
75 lineal feet ⅞-inch quarter round.
30 lineal feet sill casing and mold.
30 lineal feet plate casing and mold.
2 porch columns.
2 half porch columns.
8 brackets.
10 lineal feet top and bottom rail and balusters.
192 lineal feet 1¼x4 treads outside steps.
75 lineal feet ⅞x7½ risers outside steps.
4 pieces 2x12x16 carriages.
196 lineal feet wainscoting, cut window-sill high, cap and base.
114 lineal feet chalk trough and cap.
1 flag pole turned.
"Wilson's" rolling partition for opening between class-rooms.
Shop materials for tower to include columns, brackets, cap plate, cornice, etc. See drawing.

BILL OF MATERIALS FOR THREE-ROOM SCHOOL BUILDING, PLAN No. 3.

29,500 brick.
29 barrels lime.
17 yards sand.
565 lineal feet 6x10 for sills and girders.
104 pieces 2x10x12 floor joists.
52 pieces 2x10x13 floor joists.

20 pieces 2x10x12 floor joists.
50 pieces 2x10x18 porch joists.
520 lineal feet 1½x3 joist bearer.
750 lineal feet 1x4 bridging.
1,800 lineal feet ⅞x2-inch grounds.
450 pieces 2x6x13 studding.
900 lineal feet 2x6 plates.
52 pieces 2x8x25 ceiling joists.
26 pieces 2x8x28 ceiling joists.
42 pieces 2x8x10 ceiling joists.
36 pieces 2x8x12 ceiling joists.
110 pieces 2x6x22 rafters.
26 pieces 2x6x16 rafters.
20 pieces 2x6x14 rafters.
46 pieces 1½x8x12 king posts.
90 pieces 1½x6x16 struts.
(See drawings for materials for truss over rolling partitions.)
6,250 feet ⅞-inch surfaced sheathing.
4,000 feet ⅞x4-inch surface shingling strips.
38,000 shingles.
3,600 feet siding.
3,000 square feet building paper.
14 windows, 12 lights 12x24, transoms, 3 lights 12x18.
4 windows, 2 lights 32x36 divided.
4 transoms for class-rooms 38x48 divided.
1 triple window for gable.
1 pair entrance doors 2-6x7-0x0-1¾, with transom.
6 doors 3-0x7-0x0-1¾, with transom.
4 doors 2-10x7-0x0-1¾, with transom.
300 lineal feet each member main cornice.
150 lineal feet 1¼x4½-inch corner casing.
28 lineal feet 1¼x1¼-inch angle bead.
250 lineal feet water table.
4,250 feet 13-16x3¼-inch flooring.
3,400 square feet deadening felt.
900 feet 11-16x3¼-inch beaded ceiling.
Mill work for front entrance to include pilasters, brackets, cornice, balustrades, etc.
110 lineal feet 1¼x4-inch treads porch steps.
36 lineal feet ⅞x7½-inch riser steps.
210 lineal feet wainscoting cap and base.
112 lineal feet chalk trough and cap.
1 flag pole 14 feet long, 12 feet turned.
2 sets "Wilson's" rolling partitions.

BILL OF MATERIALS FOR THREE-ROOM SCHOOL BUILDING, PLAN No. 3-A.

23,000 brick.
23 barrels lime.
14 yards sand.

525 lineal feet 6x10 sills and girders.
104 pieces 2x10x12 floor joists.
56 pieces 2x10x13 floor joists.
54 pieces 2x10x10 floor joists.
28 lineal feet 4x8 porch sill.
4 pieces 2x8x16 porch joists.
490 lineal feet 1½x3 joist bearer.
750 lineal feet 1x4 bridging.
2,600 lineal feet ⅞x2-inch grounds.
322 pieces 2x6x13 studding.
96 pieces 2x6x10 studding.
856 lineal feet 2x6 plates.
52 pieces 2x8x26 ceiling joists.
28 pieces 2x8x28 ceiling joists.
70 pieces 2x8x12 ceiling joists.
96 pieces 2x6x20 rafters.
20 pieces 2x6x16 rafters.
24 pieces 2x6x12 rafters.
26 pieces 2x6x16 rafters.
50 pieces 1½x8x12 king posts.
50 pieces 1½x6x16 struts.
(See details for materials for truss over rolling partitions.)
3,650 feet ⅞x4-inch shingling strips.
33,000 shingles.
6,500 feet ⅞-inch sheathing.
4,000 feet bevel siding.
3,300 square feet "Neponset" waterproof paper.
3 front entrance doors, 3-0x7-0x0-1¾, with transoms.
13 inside doors 3-0x7-0x0-1¾, transoms.
16 windows, 12 lights 12x24.
10 windows, 2 lights 32x36 divided.
1 triple window for gables.
386 lineal feet cornice.
(Pilasters, columns, railings, brackets, etc., for main entrance and porches, see drawings.)
250 lineal feet 1¼x4½-inch corner casings.
125 lineal feet 1-inch quarter round.
120 lineal feet 1¼x1¼-inch angle bead.
275 lineal feet water table.
150 feet 5-4x3¼-inch porch flooring.
4,200 feet 13-16x3¼-inch flooring.
3,400 feet deadening felt.
1,350 feet 11-16x3¼ beaded ceiling.
110 lineal feet ⅞-inch quarter round.
30 lineal feet porch sill casing and mold.
20 lineal feet plate casing and mold.
2 columns.
2 half columns.
4 side porch.
6 pieces 2x12x12 carriages.

8 lineal feet top and bottom rail and balusters.
175 lineal feet wainscoting, cut window-sill high, cap and base.
75 lineal feet chalk trough and cap.
1 flag pole.
2 sets rolling partition for opening 21 feet 6 inches wide, 9 feet high.

BILL OF MATERIALS FOR FOUR-ROOM SCHOOL BUILDING, PLAN No. 4.

22,000 brick.
22 barrels lime.
14 yards sand.
540 lineal feet 6x10 sills and girders.
100 pieces 2x10x12 floor joists.
112 pieces 2x10x16 floor joists.
48 pieces 2x10x17 floor joists.
660 lineal feet 1½x3-inch joist bearer.
1,000 lineal feet 1x4-inch bridging.
3,250 lineal feet ⅞x2-inch grounds.
575 pieces 2x6x13 studding.
1,100 lineal feet 2x6 plates.
94 pieces 2x8x25 ceiling joists.
38 pieces 2x8x22 ceiling joists.
32 pieces 2x8x18 ceiling joists.
150 pieces 2x6x20 rafters.
68 pieces 2x6x16 deck-beams.
28 pieces 4x4x12 deck posts.
40 pieces 1½x6x18 struts.
(See details for truss timbers over rolling partition.)
8,000 feet ⅞-inch surfaced sheathing.
3,850 feet ⅞x4-inch shingling strips.
36,000 shingles.
4,250 feet siding.
3,400 feet waterproof sheathing.
20 windows, 12 lights 12x24.
8 windows, 2 lights 32x36 divided.
1 window for gable.
1 pair outside entrance doors 2-6x7-0x0-1¾ each, transom.
6 doors 3-0x7-0x0-1¾, with transom.
8 doors 2-10x7-0x0-1¾, with transom.
1 door 2-8x7-0x1¾.
314 lineal feet cornice.
150 lineal feet 1¼x4½-inch corner casings.
75 lineal feet 1⅛-inch quarter round.
48 lineal feet 1¼x1¼-inch angle bead.
284 lineal feet water table.
200 feet 5-4x3¼-inch flooring.
5,650 feet 13-16x3¼-inch flooring.
4,500 square feet deadening felt.
1,050 feet 11-16x3¼ beaded ceiling.
50 lineal feet ⅞-inch quarter round.

275 feet lineal feet 1¼x4-inch treads porch steps.
90 lineal feet ⅞x7½-inch risers porch steps.
4 pieces 2x12x16 carriages.
460 lineal feet wainscoting, cap and base.
190 lineal feet chalk trough and cap.
1 flag pole.
1 set "Wilson's" rolling partitions.

BILL OF MATERIALS FOR SIX-ROOM SCHOOL BUILDING, WITH AUDITORIUM, PLAN No. 4-A.

FRONT PORTION ONLY TWO STORIES HIGH.

15,000 brick.
15 barrels lime.
10 yards sand.
278 lineal feet 6x10 sill and girders.
112 pieces 2x10x16 floor joists.
48 pieces 2x10x12 floor joists.
52 pieces 2x14x25 second-floor joists.
35 pieces 2x14x26 second-floor joists.
34 pieces 2x14x12 second-floor joists.
450 lineal feet 1½x3-inch joist bearer.
650 lineal feet 1x4-inch bridging.
1,500 lineal feet ⅞x2-inch grounds.
750 pieces 2x6x13 studding.
1,650 lineal feet 2x6 plates.
60 pieces 2x8x32 ceiling joists.
48 pieces 2x8x12 ceiling joists.
26 pieces 2x8x12 ceiling joists.
140 pieces 2x6x20 rafters.
36 pieces 1½x8x12 king posts.
36 pieces 1½x6x18 struts.
(See detail drawings for materials for truss over rolling partition.)
8,500 feet ⅞-inch surfaced sheathing.
3,000 feet ⅞x4-inch shingling strips.
28,000 shingles.
6,850 feet siding.
5,750 feet waterproof sheathing.
30 windows, 12 lights 12x24.
3 mullion windows, each 12 lights 12x24.
4 class-room transoms 38x48 divided.
3 dormer windows.
2 windows, 2 lights 32x36.
2 pair entrance doors 2-6x7-0x0-1¾ each, with transoms.
Front doors to have side lights.
2 pair auditorium doors 2-6x7-0x0-1¾, with transoms.
3 inside doors 3-0x7-0x0-1¾, with transoms.
5 inside doors 2-10x7-0x0-1¾, with transoms.
240 lineal feet cornice.
360 lineal feet 1¼x4½-inch corner casings.

180 lineal feet 1⅛-inch quarter round.
75 lineal feet 1¼x1¼ angle bead.
240 lineal feet water table.
150 feet 5-4x3¼-inch porch floor.
7,250 feet 13-16x3¼-inch flooring.
850 feet 11-16x3¼-inch beaded ceiling.
5,750 feet flooring felt.
Mill work for front entrance, pilasters, brackets, cornice, balusters, etc., see details.
475 lineal feet 1¼x4-inch treads front steps.
160 lineal feet ⅞x7½-inch risers front steps.
8 pieces 2x12x16 carriages.
540 lineal feet wainscoting, cap and base.
132 lineal feet chalk trough and cap.
1 flag pole.

BILL OF MATERIALS, DORMITORY FOR GIRLS, PLAN No. 7.

See elsewhere in pamphlet for explanation of quantities, etc. See specifications for school plans for grade of materials and workmanship, which will govern for dormitory plans where applicable.

Brick for piers, 4-inch curtain walls between piers and flues.
22,000 brick.
22 barrels lime.
14 yards sand.
525 lineal feet 6x10 sills and girders.
96 pieces 2x10x16 floor joists.
48 pieces 2x10x9 floor joists.
86 pieces 2x10x12 floor joists.
90 lineal feet 4x8 porch sills and girder.
24 pieces 2x8x16 porch joists.
10 pieces 2x8x12 porch joists.
500 lineal feet 1½x3 joist bearer.
1,050 lineal feet 1x4 bridging.
96 pieces 2x10x17 second-story joists.
50 pieces 2x10x9 second-story joists.
96 pieces 2x6x17 ceiling joists.
50 pieces 2x6x9 ceiling joists.
86 pieces 2x6x12 ceiling joists.
210 pieces 2x6x22 outside studding.
600 pieces 2x4x12 studding.
1,200 lineal feet 2x4 wall plates.
70 pieces 2x6x24 rafters.
4 pieces 2x8x32 hip rafters.
50 pieces 2x6x18 rafters.
4 pieces 2x6x22 hip rafters.
30 pieces 2x4x16 rafters.
30 pieces 2x6x12 porch rafters.
30 pieces 1x8x12 king posts.
60 1x6x10 struts, main roof.

12,500 feet ⅞-inch surfaced sheathing for side walls and floors.
4,000 feet 1x4 shingling strips.
2,500 feet ⅞-inch ceiling for porch sheathing and overhang of main cornice.
42,000 shingles.
7,450 feet siding.
6,200 feet building paper.
13 windows, 4 lights 16x36.
3 mullion windows, 4 lights, each 14x36.
1 mullion window, 4 lights, each 14x32.
3 windows, 4 lights 14x32.
1 dining-room entrance door 2-6x7-6x1¾ transom.
1 front entrance door 2-6x7-6x1¾ each, transom and side lights.
1 rear hall entrance door 2-6x7-6x1¾ transom.
2 outside doors 3x7x1¾.
14 windows, 4 lights 16x32.
2 mullion windows, 4 lights, each 14x32.
1 front dormer mullion window.
4 small dormer windows.
1 double entrance door to dining-room 2-6x6-10x1⅜.
24-inch transom 5 lights.
1 double entrance door to hall 2-6x6-10x1⅜, 24-inch transom.
4 interior doors 2-10x6-10x1⅜, 24-inch transom.
6 interior doors 2-10x6-10x1⅜, no transom.
9 interior doors (second floor) 2-10x6-10x1⅜, 16-inch transom.
275 lineal feet 1¼x4½ corner casings.
40 lineal feet 1¼x1¼ angle casings.
950 feet 5-4x3¼-inch flooring.
8,000 feet 13-16x3¼-inch flooring.
6,500 feet flooring felt.
27,500 feet 9-16x3¼-inch beaded ceiling for side walls and ceiling throughout.
3,750 lineal feet ¾-inch quarter round.
Materials for one flight main stairs (see details).
76 lineal feet sill casing porches.
76 lineal feet plate casing porches.
40 lineal feet railing and balusters.
2 flights porch steps.
4 stone pier caps.
10 boxed columns.
3 cylinder mortise door locks for outside double doors, a pair top and bottom bolts, 6 pair butts, 8 sets door hinges for double swing doors.
17 mortise knob locks.
17 pairs butts.
13 transom workers.
13 pairs transom butts.
42 sash locks.
84 hook lifts.

MATERIAL FOR TRUSSES IN PARTITIONS OVER DINING-ROOM.

12 pieces 2x10x26.
4 pieces 4x6x12.
2 pieces 4x6x10.
4 4¼-inch rods 12 feet long upset ends, standard threads, nuts and washers, 8 wrought-iron straps for connections with bolts (see detail drawings for truss).

BILL OF MATERIALS FOR TWO-ROOM DORMITORY FOR BOYS, PLAN No. 8.

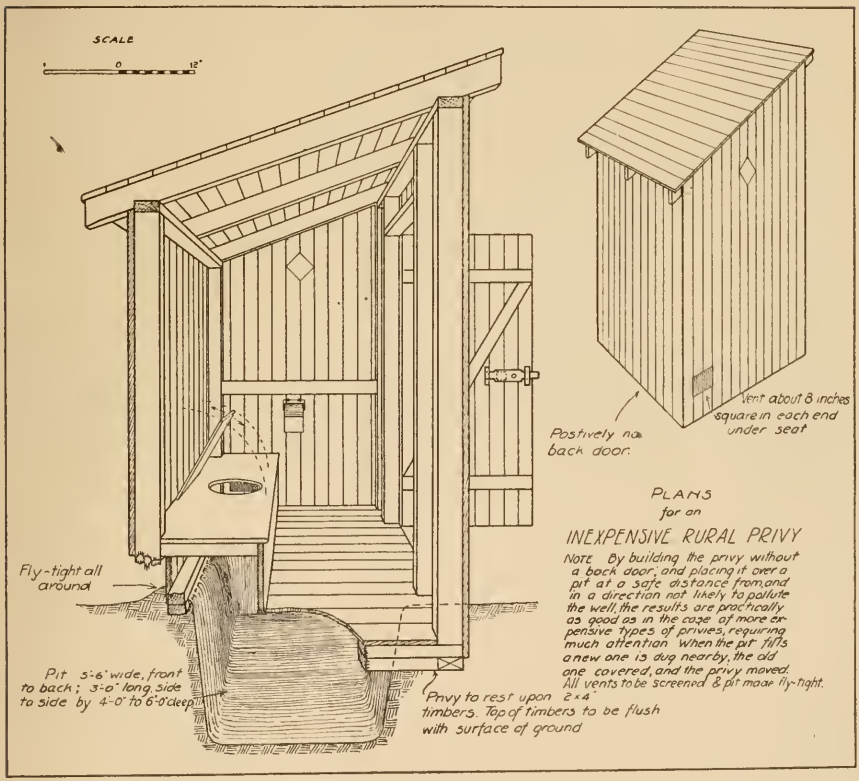
See elsewhere in pamphlet for explanation of quantities, etc.
Brick for piers and chimney.
5,500 brick.
6 barrels lime.
4 yards sand.
2⅜x2½-inch arch bars.
105 lineal feet 5x10-inch sills, main.
40 lineal feet 4x8-inch porch sills.
28 pieces 2x10x16 floor joists.
10 pieces 2x8x14 porch joists.
65 lineal feet 1½x3 joist bearer.
75 lineal feet 1x4 bridging.
118 pieces 2x4x10 studding.
225 lineal feet 2x4 wall plates.
26 pieces 2x6x16 ceiling joists.
16 pieces 2x4x16 rafters, extending over porch.
36 pieces 2x4x12 rafters.
4 pieces 3x4x12 for brackets.
1,500 feet ⅞-inch surfaced sheathing for subfloor and side wall sheathing.
750 feet ⅞x4 shingling strips.
300 feet ⅞-inch ceiling for overhang of cornice.
6,750 shingles.
1,250 feet siding.
1,000 feet building paper.
4 windows, 4 lights 16x32.
2 outside doors 3x7x1¾, 12-inch transom.
2 inside doors 2-10x6-10x1⅜.
8 pieces 1¼x4½-inch corner casings.
80 lineal feet quarter round.
250 lineal feet 5-4x3¼-inch porch flooring.
675 feet 13-16x3¼-inch flooring.
2,500 feet 13-16x3¼-inch beaded ceiling for side walls and ceilings.
475 lineal feet ¾-inch quarter round for angles.
4 mortise knob locks.
4 pairs butts for doors.
2 pairs butts for transoms.
2 transom workers.
4 sash locks.
8 hook lifts.

PRACTICAL SANITATION FOR RURAL SCHOOLS.

WARREN H. BOOKER, Sanitary Engineer, State Board of Health.

Practical sanitation in our schools is of tremendous importance, for two reasons: First, by this means much sickness and the loss of many little lives from preventable diseases can be avoided; and, second, practical lessons in sanitation taught by example at school impresses the child and is reflected in the homes.

By all odds, the greatest single factor in health and sanitation in our rural districts and at our rural schools is the proper disposal of human excreta.



PRIVY FOR RURAL USE.

Built without a back door and over a pit. The screened ventilator under the seat had best be omitted unless the odor becomes very objectionable.

A great many diseases, such as typhoid fever, hookworm disease, diarrheal diseases, particularly among very young children, and many other diseases are transmitted through careless or improper disposal of this matter. In a few sections of our State it is a regrettable fact that at some schoolhouses no

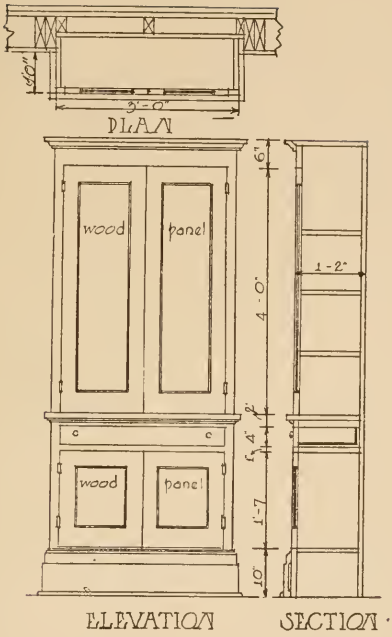
provision whatever is made for the proper care or disposal of this excrement. Near-by woods and undergrowth form the only means of privacy. As a matter of fact, it is really more essential that a school be provided with at least two good privies than that it have desks or even a stove. There is absolutely no argument in favor of not having good privies. The absence of such sanitary precaution jeopardizes the lives and health of the teacher, children, and community. Many typhoid fever outbreaks are spread directly by this means.

The simplest, cheapest form of privy yet devised for use either at rural homes or schools is that shown in the accompanying figure. Absolutely all there is to such a privy is that it be built fly-tight over a pit or hole in the ground at a safe distance from the well or spring, and on lower ground than that around the well or spring. The pit should be built about 3 feet square by 3 or 4 feet deep. In no case should the privy be located closer than 100 or 150 feet from a well or spring. Where the soil is underlaid with granite or seamy formations of any kind, a greater distance is better. For schools it is best not to have any ventilators in the ends of the seat box and omit the lid or cover for the hole in the seat. These added conveniences which may sometimes be desirable for residences are too likely to be broken at schools.

Special care must be taken to see that carpenters weatherboard the back of the privy tight clear to the ground on all sides, and that the fecal matter in the pit is in no way exposed.

Should the vault become filled, all that is necessary is to tilt the privy over, dig a new pit or hole near-by, and cover the matter in the old hole with the excavated earth. Ordinarily, such treatment will not be necessary for several years.

It is not claimed that such privies are odorless or perfect in every respect. In fact, there is nearly always some odor about them, but diseases are not contracted through odors, and while by means of more expensive arrangements or even by the application of dry earth the odor may be overcome, such arrangements are not thought necessary or even practical for most rural schools.



TEACHER'S CABINET

Suggested Plan for Cabinet for Teachers' Use.

INDEX.

THIS AGREEMENT, made the ..... day of ....., in the year one thousand nine hundred and ....., by and between ....., party of the first part (hereinafter designated the contractor), and the County Board of Education of ..... County, N. C., party of the second part (hereinafter designated the owners),

WITNESSETH, that the contractor, in consideration of the agreements herein made by the owners, agrees with said owners as follows:

Article I. The contractor shall and will provide all the materials, and perform all the work, for the completion of a ..... room frame school building to be erected in the ..... School District of.....County, N. C., in accordance with plan No. .....and as shown on the drawings and described in the specifications prepared for the State Superintendent of Public Instruction by Frank K. Thomson, Architect.

Article II. It is understood and agreed by and between the parties hereto, that the work included in this contract is to be done under the direction of the County Board of Education, and that the building shall be inspected, received, and approved by the County Superintendent of Public Instruction before final payment, as required by Section 4124 of the Public School Law.

Article III. No alterations shall be made in the work except upon written order of the County Board of Education, the amount to be paid by the owners, or allowed by the contractor, by virtue of such alterations to be stated in said order.

Article IV. The contractor shall complete the several portions and the whole of the work comprehended in this agreement on or before the.....day of....., 191....

Article V. It is mutually agreed between the parties hereto that the sum to be paid by the owners to the contractor for said work and materials shall be.....and that such sum shall be paid by the owners to the contractor in current funds as follows: In monthly payments, no payment except the final one to exceed eighty per cent of the labor and materials in the building at the time payment is made. The final payment, including the twenty per cent previously withheld, shall be payable within ten days after the completion and acceptance of the work included in this contract. Before the final payment is made the contractor will furnish to the owners an itemized statement in writing, duly subscribed and sworn to by the contractor, of the amount, if any, owing to any laborer, mechanic or artisan employed by the contractor on the work, or to any person for materials furnished; and upon delivery to the owners or their agent of the itemized statement aforesaid, the owners shall have the right to retain out of any payment then due or thereafter to become due to the contractor an amount sufficient to completely indemnify them against any such claim or claims.

Article VI. It is further mutually agreed between the parties hereto that no payment made under this contract except the final payment shall be conclusive evidence of the performance of this contract, either wholly or in part, and that no payment shall be construed as an acceptance of defective work or improper materials.

Article VII. In case the owner and contractor fail to agree in relation to matters referred to in this contract, then the matter shall be referred to a board of arbitration to consist of one person selected by the owner and one person selected by the contractor, these two to select a third. The decision of any two of this board shall be final and binding on both parties hereto. Each party hereto shall pay one-half of the expenses of such reference.

The said parties, for themselves, their heirs, successors, executors, administrators, and assigns, do hereby agree to the full performance of the covenants herein contained. In witness whereof the parties to these presents have hereunto set their hands and seals, the day and year first above written.

.....*(Seal.)*

In the presence of .....*(Seal.)*

....*(Seal.)*

Chairman County Board of Education.

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In the presence of .....(Seal.)

....(Seal.)

Chairman County Board of Education.